Douglas fir ship

United States Shipping Board Emergency ...

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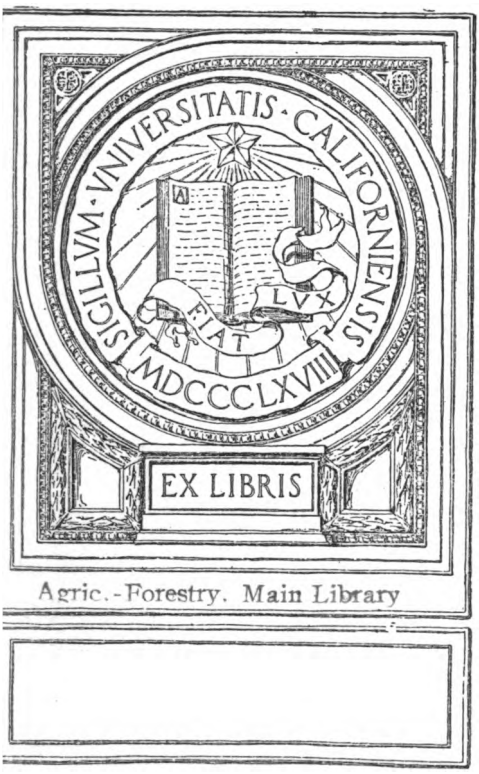

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DOUGLAS FIR SHIP

SPECIFICATIONS FOR THE CONSTRUCTION OF A STANDARD WOOD STEAMSHIP

HULL ONLY

FOR THE

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION

MAY, 1917

THEODORE E. FERRIS
Naval Architect and Engineer
30 Church Street, New York, N. Y.

WASHINGTON
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1917

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(DOUGLAS FIR SHIP)

SPECIFICATIONS

FOR

THE CONSTRUCTION OF A STANDARD WOOD STEAMSHIP—HULL ONLY

FOR THE

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION.

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1. DIMENSIONS.

Length, over all, 281 feet 6 inches; length, fore side of stem to after side of rudder post, 268 feet; beam, over planking, 46 feet; depth, molded at side of upper deck, 26 feet; load draft from bottom of keel shoe, 23 feet 6 inches; total estimated dead-weight, 3,500 long tons; sea speed, loaded, 10 knots.

2. DESCRIPTION.

The vessel will be of the single-deck type, with hold beams and shifting 'tween-decks, to have wood deck houses on bridge deck and on poop deck; single screw. To have elliptical stern and straight stem. To be schooner rigged with two wood pole masts, fitted with cargo booms, and one smokestack. To have four hatches at upper deck and small hatch at poop deck. There will be four calked water-tight wood bulkheads extending to upper deck, forming two cargo holds and machinery space. There will be a deep tank for water ballast and water tanks for boiler feed. Culinary water will be carried in separate steel tanks located in engine room, furnished and installed by owners. The afterpeak will be piped for fresh water for boiler feed and for salt water for trimming tank. The forepeak will be piped for fresh water only. Steam winches will be fitted at hatches for working cargo booms, supplied and installed by owners.

The amidship deck houses on bridge deck will contain officers' quarters, wheelhouse, chart room, wireless, gunners, quarters for petty officers, engineers, cooks, oilers, messmen, mess boys, etc. In the forecastle head will be quarters for firemen and sailors, in the poop quarters for gun crew. The bridge space will be used for coal or cargo, and a part of poop space for stores or cargo. Awnings will be fitted over bridge, abreast wheelhouse, over boat deck between officers' house and wireless

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house, abreast of officers' house, abreast of steering house, and around the stern at poop deck.

Propelling machinery as furnished and installed by owners will consist of one triple-expansion engine, two single-ended Scotch boilers or water-tube boilers fitted with heated forced draft for coal burning with one fireroom, together with all necessary auxiliaries, electric-light plant, steam winches, warping capstan, steam windlass, steam and auxiliary hand steering gear, ice machine, steam-heating system, complete drainage system, all as described in the following specifications. (Twin-screw and geared turbine steam propelling machinery may be substituted subject to approval of owners.)

3. CONDITIONS.

It is distinctly understood that it is intended by owners to receive from the builders a hull constructed in a satisfactory manner for ocean service and fitted in all respects to carry freight and handle same economically. Any omissions in the specifications whose absence from the construction of the vessel's hull would be weakening or detrimental will be furnished by builders—the decision in any case arising to rest with the owner's representative.

The work in all departments shall be done under the supervision and subject to the approval of owner's representative, and facilities shall be afforded him for inspecting the material and workmanship in part, portion, or whole, during working hours. He shall have authority to reject anything that is not suitable, and in such cases it is to be made good at builder's expense.

Articles of the same description, mentioned in the specifications and repeated by the inventory, will be supplied only once by builders, unless specified otherwise.

4. DELIVERY.

The hull will be delivered by builders to their wharf or as directed by owners, subject to arrangements to be agreed upon.

5. CLASSIFICATION TO UNITED STATES INSPECTION.

The hull will be built to the requirements and under special survey to the American Bureau of Shipping to Class A–1 for 15 years. Materials to be tested in accordance with American Bureau of Shipping requirements. Classification fees and fees for testing of materials will be paid for by owners; classification certificates and test certificates will be supplied by the builders to the owners. The vessel to be constructed, equipped, and fitted to meet and pass the United States Steamboat-Inspection Rules in force when vessel is completed for ocean service, and to comply with the regulations of the Seamen's Act in effect November 4, 1915, and amendments thereto.

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6. INSURANCE.

Builders to keep the hull, including all outfit, fully and specifically insured both ashore and afloat until delivered to owners; insurance to protect all interests as they may appear. (See contract.)

Builders to pay for all patent rights, royalties, etc., if any are embodied in the building of this vessel, and all expenses of the vessel until delivery to owners. Except as subject to the requirements of contract, builders to have the vessel measured for registered tonnage and tonnage and number marked, together with all certificates and markings for the certification of living quarters, and obtain certificates from United States customhouse and United States Steamboat-Inspection Service.

7. DRAWINGS AND PLANS.

Drawings from which this vessel will be built will be supplied by the United States Shipping Board Emergency Fleet Corporation as prepared by Theodore E. Ferris, who shall be known as the owner's naval architect and engineer, also owner's representative, except when other person is designated as representative. Drawings as supplied will consist of general arrangement of decks, lower hold, inboard profile, midship construction section, together with lines and offsets for lofting the vessel and framing plans. All drawings necessary during the progress of work, such as plan of drainage, heating, plumbing, sanitary system, steering gear, masts, rigging, cargo gear, electric light arrangement and wiring together with all necessary detail hull plans, all as required to properly execute the building of the vessel, are to be prepared by the builders and submitted for approval, or will be supplied by the owners, which arrangement and understanding will be agreed upon. Any modification to the plans furnished by owners must only be made after same have been agreed to by owner's representative.

8. TIMBER AND LUMBER.

The timber and lumber used in construction of this vessel will be, except as otherwise specified, Douglas fir, grade select common.

9. MATERIAL AND WORKMANSHIP.

All materials used in the construction of this vessel to be of specified quality. Timber to be free reasonably from sap, shakes and large knots, and other defects. Blacksmith work to be smooth, of substantial character, strong and galvanized where specified. Jump welds will not be allowed in important forgings. Materials and fastenings are to conform to American Bureau Shipping requirements.

10. WATER TESTING OF COMPARTMENTS, ETC.

Fore and after peaks, will be tested with a head of water in accordance with American Bureau Shipping requirements.

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Wood decks, bulkheads, ports, scuttles, etc., will be tested as required by owner's representative.

11. (Omitted.)

12. WOOD CONSTRUCTION.

The scantling throughout will be in accordance with approved midship section as furnished. The entire hull will be built of Douglas fir, excepting the stern post, rudder post, rudder stock. The stern post and rudder post will be iron bark or other approved hardwood. The rudder stock will be iron bark. The keel shoe will be of oak. Wood knees will be of fir or other suitable wood; treenails will be of locust or other suitable hard, close, straight-grain wood; joiner sheathing and joiner decks where specified to be of fir or cypress.

13. SCARFS.

All scarfs will be plain scarfs, with nibs about 23 per cent depth of timber, and in all cases nibs to be fastened. Scarfs will be fitted in keel, keelsons, girder keelsons, bilge, bottom and side ceiling, clamps, shelf and waterway timbers, deck-girder timbers, plank shears, rails, garboard streak, first and second streaks, sides of shaft tunnel, engine-foundation keelsons. Length of scarfs as specified elsewhere. Outside planking, deck planking, ceiling in bridge, forecastle, and poop, and all house sheathing will be square butted.

14. KEEL.

Of fir, 20 by 16 inches, in not more than four lengths, with scarfs 10 feet long.

15. SHOE.

Of fir, 3 inches thick, 20 inches wide, in not more than 10 lengths, square butted.

16. STEM.

Of fir, sided 16 inches and molded 30 inches, scarfed to stem gripe, extending in one length above forecastle-head chock. To have rabbet for plank ends. Stem to be bearded off from rabbet to 10-inch cutwater.

17. STEM IRON.

To be 1 by 9 inches, with oval or chamfered edge, lapped over at stem head, and to extend down well under forefoot. To be fastened with 1-inch countersunk head-pointed bolts, staggered, and spaced about 18 inches apart.

18. APRON.

Of fir, 16 inches sided and molded 24 inches. Apron in one length, extending to forecastle deck.

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19. STEM GRIPE.

Of oak, sided same as stem, molded as shown. To be bearded off from rabbet to cutwater, same as stem.

20. KNIGHTHEADS.

Of fir, sided 24 inches and molded same as frames, fayed up to inside apron. To be in one length, extending up to forecastle deck.

21. HAWSE-PIPE TIMBERS.

Of fir, molded same as frames and sided to fill in the space solid between knightheads and the forward cant. To extend up to upper deck.

22. FORWARD DEADWOOD AND KNEE.

Of fir, sided 20 inches and molded 26 inches, extending from through floors forward for receiving heels of cant frames. Knee of fir or oak for connecting keel to stem gripe and apron 20 inches sided with long arms.

23. FORWARD DEADWOODS.

Of fir, sided 20 inches, bedded in between top keelson and apron as shown.

24. OUTSIDE AND INSIDE STERNPOST.

Of iron bark or other approved hardwood, sided 30 inches in way of shaft log 20 inches above keel and at head molded 24 inches. Lower end of each post tapered to siding of keel and to have tenon 5 by 12 by 14 inches fastened with two (2) 1⅜-inch treenails. Each sternpost to extend to upper deck and fastened to deck beams. The after side of outer post to be rounded off above and below stern bush casting for easy flow of water.

25. SHAFT LOG.

Of fir, 30 by 30 inches. At forward end to be 6-inch oak cap piece for receiving stuffing-box casting. The after end of shaft log to be let into inner sternpost 4 inches.

26. AFTER DEADWOOD AND KNEE.

Of fir, sided 20 inches and molded 26 inches, extending from through frame floor aft to sternpost for receiving heels of cant frames. Knee sided 20 inches with long arms connecting keel and inner sternpost.

27. AFTER DEADWOODS.

Of fir, sided 20 inches, bedded in between top of shaft log and inner sternpost, as shown.

28. RUDDERPOST.

Of iron bark or other approved hardwood, sided 18 inches, molded 18 inches, to have tenon in keel 5 by 12 by 14 inches, fas-

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tened with two 1⅜-inch treenails. Rudderpost to extend above upper deck as shown. The forward edge in way of propeller wheel to be rounded off for good flow of water.

29. HORN TIMBERS.

Of fir, sided 12 inches and molded as shown on plan. To extend from fore side or inner sternpost up to knuckle rim timber led in and toe fastened.

30. KNUCKLE RIM AND POOP CIRCLE FRAMING.

The stern around the knuckle in way of the upper deck and at poop deck to be framed with fir as shown on framing plan. Timbers to be worked to shape and connected with anchor stocks. The poop-deck circle framing to have rabbet for planking.

31. RUDDER TRUNK.

To be formed by rudderpost, back timber, and by building up on the horn timbers as shown. To be staved up inside with 3-inch oak. At top to be fitted in halves, 6-inch thick oak collar forming bearing for rudderstock, collar fastened with lag bolts. A similar collar fitted at poop deck.

32. WHEEL PORT ARCH FRAMING.

Between the sternpost and rudderpost at the arch of propeller post to be worked wood knees 20 inches thick, above which up to the deck the space to be filled in with fir timber.

33. IRON SHOE AND ARCH KNEES.

At each side of keel, in way of wheel port, with arms about 24 inches long extending up on rudderpost and sternpost, also extending forward on keel, to be 1 by 12 inch plates, fastened through keel with fifteen 1-inch countersunk head clinch bolts and in each arm six clinch bolts, through rudderpost and sternpost. Fore and aft connecting keel to rudder post and stern post, to be heavy iron knees fastened with clinch and blunt bolts as per detail plan. Around the arch of wheel port, iron plate 1 inch thick by 12 inches wide with chamfered edge to be worked, fastened with 1-inch countersunk head clinch and blunt bolts, in edges spaced about 12 inches apart.

34. RUDDER.

Stock to be of selected iron bark, finished 20-inch diameter, to be in length extending above poop deck and lap on rudder blade about half way down with taper. Rudder blade to be built up of fir, tapered to 14 inches after edge. Rudder to be edge bolted with 1⅜-inch bolts, spaced about 24 inches apart. To have five sets of composition rudder braces with 4-inch pintles and 8-inch side straps. Bolts fastening braces to be 1⅛ inches diameter and of the same metal as braces, set up with nuts, five

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bolts in each brace. Cast-steel rudder braces and pintles may be substituted, in which case pintles to be lined with brass, bush working in white metal.

35. MAIN FRAMES.

To be double-sawed frames of fir, sided 12 inches, molded on keel 26 inches, at turn of bilge 18 inches, at top of bilge 15 inches, at upper deck 10 inches, at bridge, forecastle and poop deck 8 inches, also at bulwark rail 8 inches. Frames spaced 36 inches center to center. In way of the bridge, forecastle and poop, frames to continue up double. In way of bulwarks in wells, timber heads above upper deck single, forming bulwark stanchions. Double frame at each butt fastened with 1¼-inch treenails as shown on plan. Floors to be worked right and left with butts; also fullocks and top timber overlapper and with butts as shown on midship section.

36. CANT FRAMES.

Of fir same siding and molding and built up in similar manner to main frames will be fitted at ends of vessel as per framing plan. Lower ends let into deadwood 1 inch.

37. MAIN KEELSONS.

Eight in number arranged as shown on midship section of fir, 20 by 20 inches, in lengths 56 to 80 feet, connected with 10-foot scarphs; care taken to get the best shift of scarphs possible.

38. GIRDER KEELSONS.

One each side, of fir arranged as shown on midship section. The first streak, 12 by 16 inches, locked over frames 2 inches, second and third streaks, 8 by 16 inches. All streaks connected with 8-foot flat scarphs. First and second streak worked full length between peak bulkheads; third or top streak about ⅝ length amidship.

39. BOTTOM AND SIDE CEILING.

All of fir, bottom ceiling 8 by 12 inches, in lengths 40 to 60 feet, average 50 feet, square butted. Side ceiling 10 by 12 inches, in lengths 40 to 60 feet, average 50 feet, connected with scarphs 8 feet long. One streak of side ceiling, each side to be 12 by 12 inches, locked over frames as shown.

40. BILGE CEILING.

Of fir, three streaks each side as shown, 14 by 14 inches, with five streaks between 12 by 14 inches; all of the bilge ceiling in lengths 40 to 60 feet, average 50 feet, connected with 8-foot flat scarfs.

41. AIR STREAKS.

Two air streaks fitted each side inside ceiling as shown.

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42. GARBOARD STREAKS.

Of fir, first streak, 10 by 18 inches, in lengths of 60 feet, connected with 6-foot scarphs. Second streak, 8 by 18 inches, in length of 60 feet, connected with 5-foot scarphs. Third streak, 6 by 18 inches, in lengths same as second streak, square butted.

43. IRON STRAPPING.

To be arranged as shown on fastening plan. Top belt ¾ by 8 inches, to extend from about 12 feet forward of No. 1 hatch to about 12 feet aft of No. 4 hatch, connected by triple riveted butt laps fastened to each frame, two 1 by 10 inch countersunk head blunt bolts staggered diagonal straps of ½ by 4 inch iron let into outside of frame and inclined at 45° each way, will be fitted so as to meet at top belt in every other frame space. Diagonals will be connected to top belt by two ⅞-inch rivets, and at each crossing by one 1-inch rivet; also fastened to each frame timber by one 1 by 10 inch countersunk head blunt bolt. Diagonal straps to be carried well down and wrapped around bilge far enough to overlap ends of flood timbers.

44. OUTSIDE PLANKING.

All of fir in lengths 30 to 60 feet, average 45 feet. Bottom of planking, 5 by 18 inches; bilge planking, 6 by 10 inches; side planking, 5 by 10 inches, 5 by 9 inches, and 5 by 8 inches; topside planking, 6 by 9 inches. All with square butts on frames, seams out gauged for calking. The circle of stern between knuckle line and poop deck planked vertical.

45. MAIN CLAMP TIMBERS.

Of fir, two streaks each side 14 by 14 inches, one lock streak each side 14 by 16 inches locked over frames 2 inches. Clamp timbers in lengths 40 to 60 feet, average 50 feet, connected with 7-foot scarfs. At the ends of hull where shape requires, these clamp timbers may be worked in two thicknesses.

46. UPPER-DECK BEAM-SHELF TIMBERS.

Of fir, each side, two streaks 10 by 12 inches, one lock streak 12 by 12 inches locked over beams 2 inches, one bosom streak 14 by 14 inches. Shelf timbers in lengths 40 to 60 feet, average 50 feet, connected with 7-foot scarfs. At the ends of hull, where shape requires, these inside shelf timbers may be worked in two thicknesses.

47. HOLD-BEAM SHELF TIMBERS.

Of fir. Each side over hold beams one streak 12 by 14 inches and one lock streak 14 by 14 inches, locked in hold beam 2 inches. Below hold beams, one streak 12 by 14 inches, one lock streak 14 by 14 inches locked over beam 2 inches and one bosom streak 14 by 16 inches. All shelf timbers in lengths 40 to 60 feet, average 50 feet, connected with 7-foot scarfs.

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48. UPPER-DECK WATERWAYS.

Of fir, two streaks each side 15 by 15 inches, inside streak locked into beams about 2 inches. Waterway in lengths 40 to 60 feet, average 50 feet, connected with 6-foot scarfs.

49. UPPER-DECK BEAMS.

Of fir, sided 12 inches, molded 14 inches, worked with 9-inch crown shape 5 inches and spring 4 inches. Beams doubled at hatch and engine and boiler openings. Beams spaced about 4 feet center to center, as per framing plan. In way of hatches and other openings, carling beams to be fitted sided 8 inches, molded 14 inches, spaced as shown on plan.

50. HOLD BEAMS.

Of fir, sided 14 inches and molded 16 inches, fitted throughout the hull between hatches and other upper-deck openings, spaced about 4 feet centers, as per framing plan. Beam and filling timbers spaced about 4 feet apart, to be fitted between upper and lower shelf timbers, where through hold beams are not fitted.

51. CONTINUOUS DECK GIRDER AND HATCH COAMINGS.

Of fir. One girder each side in way of hatch coamings, continuous from forecastle head bulkhead to poop bulkhead. Girders made up by two 14 by 14 inch and one 12 by 12 inch timbers, with 14 by 14 inch hatch header and filling timber between through beams, all as shown on midship section. Girder timbers to be connected with 6-foot scarfs. Hatch end coamings to be made up with 14 by 14 inch and 12 by 12 inch toe fitted into girder timbers, forming remainder of hatch coaming 10 by 10 inches; top coaming timber to be fitted.

52. CENTER AND WING STANCHIONS.

Of fir, size 12 by 12 inches, spaced and located as per framing plan. The center stanchions connected to keelson with 8-inch wood knee, one stanchion in way of each hold beam, connected at hold beam with two ¾ by 4 inch iron straps, fastened with six ⅞-inch screw bolts; also connected to upper deck beams in similar manner. Center stanchions fitted with gumwood saddles as shown. Wing stanchions in one length connected bottom and top and to girder keelson and deck girder with 8-inch wood knees, locked over hold beams and fastened with two 1-inch screw bolts set up on plate washers.

53. POINTERS AND HOOKS.

The pointers will be worked at bow and at stern of hull, of fir, 4 by 24 inches, in three and four thicknesses, connected at ends with 14-inch wood knees or filling timber. To be not less than three pointers at each end of hull. Hooks to be fitted at bow and stern, connecting hold beam shelf timbers, upper deck and forecastle head shelf timbers.

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54. TIE-RODS.

Iron tie-rods, 1½ inches diameter with turnbuckles, will be fitted in way of upper beams and hold beams, spaced about every fourth beam. Ends of tie-rods to have large heads set up plates.

55. LODGING KNEES.

Lodging knees will be fitted for upper, bridge, forecastle, and poop deck framing as per framing plan. Knees for upper deck 9 inches; otherwise 6 inches.

56. HULL CALKED WATER-TIGHT BULKHEADS.

To be four calked water-tight transverse bulkheads, located as shown on plan. Planking 3 by 8 inch fir, double diagonal, studding 8 by 12 inch fir, spaced about 36 inches apart.

57. SHAFT TUNNEL.

Built of fir to shape and size, as shown on plan, sides 6 by 10 inch edge bolted, top 4 by 10 inches, and beams 6 by 6 inches, spaced about 36 inches centers. Tunnel in way of mast reinforced with studding.

58. DEEP TANK FOR WATER BALLAST.

Forward of boiler-room bulkhead extending into hold will be a deep tank for water ballast, extending up to line of hold beams. Bulkhead to be 3 by 8 inch double diagonal fir. Studding 8 by 12 inch fir, spaced 24 inches apart. Center fore and aft bulkhead 6-inch thick fir, studding 8 by 12 inch fir, spaced about 30 inches apart. In way of hold beams over deep tanks a 4 by 4 inch fir calked deck to be fitted and at the forward end water-tight wood hatches, as shown on plan. These tanks will have a capacity of about 350 tons salt water.

59. BOILER FEED TANKS.

Aft engine room bulkhead each side of thrust will be boiler feed tanks. The tanks to be of steel, with a total capacity of about 80 tons, furnished by owners. Builders provide foundations and chocks for these tanks.

60. FORE AND AFTER PEAKS.

The fore-peak tank will be arranged for carrying fresh water. The after-peak tank will be arranged for carrying fresh water for boiler feed and salt water for trimming tank.

61. COAL BUNKERS.

To be built of size as shown on plan, 1⅝ inches thick tongued-and-grooved fir doubled, with studding 4 by 4 inch fir, spaced about 24 inches apart. Tie braces to be fitted from bunker side of hull. Coaling openings to be fitted on each side with shifting boards.

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62. ICE HOUSES AND COLD STORAGE.

As shown on plan, will be steward's cold-storage rooms, insulated on all sides, top and bottom. Insulation composed of compressed cork, tar felt, or building paper and air spaces formed with ⅞-inch tongued and grooved soft wood. Amount of insulation and number of air spaces will be to plan approved. The cold-storage rooms will be lined with No. 22 galvanized sheet iron, fastened with brass screws and seams made tight. Floors will be covered with sheet lead ⅛ inch thick, and lead will be brought up 12 inches above floors at all sides of the room. Doors will be strongly built and insulated to the same thickness as the walls of the rooms, and they will be carefully fitted and swung on heavy triple hinges of wrought iron, secured by double-wedge lever locks of composition. The rooms will be fitted with meat hooks and holders, galvanized-iron shelves and racks, as directed. Each room will be provided with suitable scuppers and strainers, thermometer, and electric light.

63. MAST PARTNERS AND STEPS.

Mast partners of fir bedded between beams and of thickness equal to molded depth of beams. To be of width and kneed to beams as shown on framing plan. Foremast step formed on keelson with white oak timber with mortise for mast step, to be through fastened with 1-inch bolts clinched over rings and fastened to keelson with eight 1-inch driftbolts driven over rings.

64. FILLING CHOCKS.

At the waterways and timber heads the space between waterways and planking to be filled in with fir, fastened, and calked with pine wedges, and made water-tight.

65. LIMBERS AND CHAIN.

To be cut in frames 4 inches wide and 2½ inches deep with chamfered edges each side. To have ⅝-inch close-link galvanized limber chains through, and to be properly installed.

66. ENGINE AND THRUST SEATING.

Extra fir keelson 20 by 20 inches to be fitted in way of engine and thrust foundation as shown on midship section. The first tier of these keelsons next main keelson to extend fore and aft in engine and boiler space for about 50 feet; the remaining keelson about 30 feet in way of engine and thrust. On the keelson in way of engine and thrust bed to be fitted 4 inches thick fir packing timbers. In way of engine and thrust foundation, the space between floors across keel to be filled in solid with short floors thoroughly well fastened.

67. BOILER SEATING.

Extra keelson to be fitted to take the boiler saddles as per boiler saddle plan, and keelson well fastened.

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68. ENGINE AND BOILER HATCHES.

Sides to be formed by deck girders, and ends with 12 by 12 inch fir sill timbers; otherwise the sheathing, studding, sills, and plates to be as shown on midship section.

69. COAL CHUTE.

At the after side of boiler hatch to be a coal chute as shown on plan, sheathed with 2 inch thick fir and 4 by 4 inch studding. To have hatch cover at top, doors for discharging coal in bridge space and opening each side through upper deck for discharging coal in side bunkers.

70. ICE MACHINE AND DYNAMO FLAT.

At starboard side of engine room in way of hold beams to be a flat for ice-machine dynamo and engineer's storeroom. Short hold beams to be fitted and 4 by 4 inch calked deck laid. Flat to be well stanchioned to take weight of machinery.

71. MAIN RAIL.

Of fir, 6 by 18 inches, worked in average lengths of 32 feet, connected with 5-foot scarfs. To be let over timber heads with 1-inch mortise.

72. BULWARK AND STANCHION STREAKS.

Of fir, one outside 4 by 10 inches; two inside 4 by 8 inches, worked in long lengths, square butts shifted. Bulwarks 3 inch thick fir, worked in long lengths with butts shifted.

73. BULWARK STANCHIONS.

To be formed by main frame top timbers extended up.

74. BRIDGE, FORECASTLE, AND POOP CLAMPS.

Of fir, two streaks 5 by 12 inches, one lock streak 7 by 12 inches, locked over frames 2 inches, worked in lengths 24 to 40 feet, average 32 feet, connected with scarfs 5 feet long.

75. BRIDGE, FORECASTLE, AND POOP SHELF STREAKS.

Of fir, two streaks, 5 by 8 inches, one lock streak 6 by 8 inches locked over beams 1 inch, worked in long lengths with scarfs 5 feet long.

76. BRIDGE, FORECASTLE, AND POOP CEILING.

Of fir, 3 by 6 inches, with square butts shifted, worked in long lengths.

77. BRIDGE, FORECASTLE, AND POOP PLANKSHEER AND LOCK STREAK.

Of fir, plank-sheer 8 by 14 inches, mortised over frame heads, worked in long lengths connected with 5-foot scarfs. Lock streak 6 by 8 inches, locked into beams 1 inch, worked in long lengths connected with 3-foot scarfs.

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78. UPPER-DECK DECKING.

Of fir, 4½ by 4½ inches net, laid edge grain up and worked in lengths 20 to 40 feet, average 30 feet. Butts cut on beams and decking outgauged for calking.

79. BRIDGE, FORECASTLE, AND POOP DECKING.

Of fir, 3 by 3 inches net, laid edge grain up and worked in average lengths of 30 feet. Butts cut on beams and decking outgauged for calking.

80. BRIDGE, FORECASTLE, AND POOP END BULKHEADS.

Of fir, 4 by 8 inches, laid athwartship, edge bolted, calked, and made water-tight. Studding, 6 by 8 inches, fir, spaced about 24 inches apart.

81. CHAIN LOCKER.

Of size as shown on plan, located forward of collision bulkhead. To be built same manner as water-tight bulkhead, calked, and made tight. To have center division and means provided for securing ends of chain cables. To have drain to bilge.

82. COAL TRIMMING TRUNK.

At center line through upper deck in bridge to be a low trunk with hatch about 2 by 3 feet, with cover for trimming coal down to fireroom; below the hatch to be a box trunk leading down to about 3 feet above fireroom floor.

83. COAL PORT IN BRIDGE.

Each side in bridge as shown to be a coal port, 3 by 4 feet, opening to be framed and fitted with heavy framed wood door, with rabbet jamb and rubber packing to make doors tight. Doors fitted with necessary hinges and clamping bolts.

84. FAIRING UP WORK.

The framed body of vessels to be properly ribboned and shored to retain shape. Inside surface of forms to be dubbed so as not to leave over 10 per cent sawed surface on the frame, the outside of frames to be dubbed for each streak of planking, and the outer surface of planking rounded to conform to shape of vessel, joinered so as to take paint in a finished manner. The thick ceiling is to be rounded on the back so as to fit frames, and to be dubbed fair on the inside before the outside fastening is set in and clinched.

85. CULINARY DRINKING TANKS.

Fresh water for culinary use and drinking water will be carried in two fresh-water tanks located in engine room, starboard side. These tanks will have a total capacity of 7,000

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gallons of fresh water. The tanks will be built of steel, thoroughly stiffened both vertically and horizontally, provided with swash plates, brass drain cocks, try cocks, manholes, ladder rungs inside and out for getting in and out of tank. Tanks to be secured to ship so as to prevent any movement. After testing to have two coats of cement wash inside, and three coats of lead and oil paint outside. To be fitted with filling, suction, and other necessary connections, vent pipe, etc. There will be a gravity tank of about 300 gallons capacity located on house deck as shown, to be pumped up by fresh-water pump in engine room, also to have supply connections to basins and galley. These tanks will be furnished and installed by owners. Builders provide foundations and chocks.

86. WATER-TIGHT DOORS.

Water-tight wood doors will be fitted in bridge, poop, and forecastle weather bulkheads as shown. To be heavy framed wood doors with rabbet jamb, to make them as near tight as possible without rubber packing. Doors to be of size as shown on plan, and to be fitted with necessary hinges, clamping bolts, and hooks. Hinges to have composition pins.

87. HULL DECK SCUPPERS AND MANHOLES.

Main, bridge, poop, and forecastle deck scuppers from waterways will be of lead pipe of suitable size and provided to drain overboard through ship's side. Scuppers from chain lockers to drain into bilge. All scuppers will be provided with strainers at deck end. Water-tight manholes will be provided for access to peak tanks, ship's fresh-water tanks, and from deck for access to cargo spaces as shown on plan.

88. DECK AND BUNKER SCUTTLES.

Cast-iron water-tight scuttles, about 20 inches in diameter, will be fitted in bridge deck and non-watertight scuttles will be fitted in upper deck in bridge for coaling bunkers.

89. HAWSE PIPES.

Cast-iron hawse pipes suitable for stockless anchors will be fitted. They will be of ample thickness, with inside diameter sufficient to clear chain shackles and of proper size to stow the anchors. The lower side of the hawse pipes to be thicker than the upper side. The flange to planking will be well bolted, and a casting will be fitted at deck end of hawse pipes. Steel plate covers will be provided.

90. DECK MACHINERY FOUNDATIONS.

Foundations built of timber on deck and to conform to winch bedplate will be fitted under the deck winches and will be about 12 inches high above deck. Also foundations for windlass and capstan.

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91. FOUNDATION FOR AUXILIARIES.

Substantial foundations of timber will be built for all auxiliary machinery and thoroughly bolted and supported by stanchions where necessary.

92. TUNNEL ESCAPE.

At the after end of shaft tunnel extending up to poop deck will be a tunnel escape, as shown on plans. To be 27 by 30 inches inside size, built of 2-inch thickness fir, calked and made tight. To be fitted inside with ladder rungs and have opening and door into poop.

93. FREEING PORTS.

To be cut through bulwarks in number and location as shown on plan; size about 18 by 30 inches. The opening to be framed and fitted with four 1-inch diameter galvanized-iron bars standing vertical.

94. MOORING RINGS.

Of cast iron or wood timber, worked through bulwarks, located as shown. To have hole for mooring lines, size about 6 by 12 inches, oval.

95. GUN FOUNDATIONS.

On forecastle head deck as shown, built of heavy timber and thoroughly fastened, will be foundation for forward gun; stanchioning and timbering under deck to be fitted as necessary. On the deck house aft on poop will be provided foundation for the after gun. If found necessary in order to carry the gun, this house to be built of log timber 6 by 12 inches, edge-bolted, and in addition to studding, and the deck in way of gun base to be carried with steel frame stanchions, spanning into hand steering gear.

96. CALKING AND PAYING.

The 10-inch garboards to be calked with eight threads of oakum; the 8-inch garboard to be calked with seven threads of oakum, both treble horsed. The 6-inch garboard to be calked with six threads of oakum double horsed. The 6-inch planking to be calked with not less than five threads of oakum, the 5-inch planking, not less than four threads of oakum; all to be double horsed. The upper deck to be calked with one thread of cotton and two threads of oakum, horsed once. The bridge, poop, and forecastle decks, one thread of cotton and one thread of oakum, horsed once. All deck seams to be well payed with pitch. The outside plank seams up to the 18-foot water line to be filled with cement; the balance of the outside seams to be payed with a white lead paint and linseed oil. The water-tight bulkheads in hull, decks over water tanks, and bulkheads of bridge, forecastle, and poop to be calked with one thread of

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cotton and two threads of oakum, horsed once, and payed with white lead and oil paint; decks over tanks and weather bulkheads payed with pitch. The ceiling in way of peak tanks to be filled and wedged around ends with pine, then seams calked with five threads of oakum, double horsed; seams payed with white lead and oil paint. The outside sheathing of bridge and poop deck houses to be calked with two threads of cotton, payed with paint, and puttied. The bottom, bilge, and side ceiling all fore and aft to be either calked or wedged with white pine.

97. HULL PAINTING.

The bottom of vessel up to light water line will have three coats of approved make of copper paint. Above light water line to receive a priming coat; then two coats of pure lead and oil paint of color as directed. The inside of hull, bulkheads, beams, etc., to receive a priming coat; then one coat of pure lead and oil paint, gray color. All bright wood exposed to weather will receive three coats of varnish. Engine and boiler casings, companions, hatches, rails, masts, derricks, ventilators, boats, and all other deck work will be painted with three coats of paint of color as directed. Deck machinery will have final painting of approved color. Smokestack will be painted black and steamship company's mark will be placed as directed.

During the building of hull for preserving all faying or joined surfaces or timbers, planking, etc., throughout will be treated with Avernarins Carbolineum or other approved wood preservative.

Iron straps and belt painted with two coats of red lead and oil, paying surfaces painted before putting work in place.

98. FASTENINGS.

General.—All fastenings in planking, decks, waterways, bulwarks, rails, coamings, hatches, houses, weather bulkheads, erections and joiner work, stem, sternpost, rudderpost; rudder to be galvanized, otherwise of black iron, and to be equal to the requirements of American Bureau of Shipping, and, in addition, in accordance with the following plan of fastenings: Screw-bolt fastening to be used where necessary. All bolt-iron fastening through yellow pine or fir wood for bolts up to 24 inches in length to be driven with about ⅛-inch drift; for bolts exceeding 24 inches in length driven with drift of $\frac{1}{16}$ inch; for bolts through oak $\frac{1}{16}$-inch drift. All bolts driven over clinch rings to be well headed, and blunt or driftbolts pointed where necessary. All bolt fastening in outside planking, waterways, plank sheers, rails, and weather bulkheads, and all bolt or spike fastening in weather decks to be plugged with white or yellow pine plugs dipped in white lead paint. Treenails to be of good grade split locust, oak, or other approved wood, and wedged on both ends across the grain of the wood through which they are driven; as many treenails as possible, at least one-half, to be

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driven through and welded on both ends. Tie-rods and screw bolts, where necessary, set up in large heavy plate washers.

Keel.—The scarfs in keel to be fastened with eight 1¼-inch bolts, set up over clinch rings at both ends.

Shoe.—The shoe will be fastened to keel with 7 by 8 inch spikes, spaced 12 inches apart, countersunk and plugged.

Frames.—The frame timbers to be fastened together with 1¼-inch treenails and ⅞-inch bolts. The number of fastenings to be as shown on the body section. As the frames are raised and placed in position they will be fastened to keel with two 1¼-inch driftbolts.

The cant and half frames forward and aft shall be bolted to deadwoods with six bolts in each half frame to be 1¼-inch and two 1⅛-inch. At least two of the 1¼-inch bolts will extend from (half) frame on the other side through deadwood and set up over clinch rings.

Stem and apron.—To be fastened with 1⅛-inch bolts, 16-inch centers, driven from outside of stem and set up on clinch rings on inside apron.

The stem and stem gripe connected to the keel with a large knee and will have at least twelve 1⅛-inch bolts driven from the outside of stem and stem gripe and keel through knee or deadwoods and keelsons and set up over clinch rings.

Knightheads.—To be fastened to stem with 1⅛-inch bolts spaced 16 inches apart. About one-half of these bolts to extend through both knightheads and stem set up over clinch rings. Hawse pipe timbers to be fastened with driftbolts in similar manner.

Outside and inside sternposts.—Each post to have a tenon 10 by 12 inches and through keel, fastened with two 1⅛-inch treenails. The inside sternpost to be connected to keel with large wood knee, fastened with ten 1⅛-inch bolts, the bolts through keel to be set up both ends over clinch rings, the bolts into sternpost driven over clinch rings. The sternposts to be fastened together with 1⅛-inch bolts, driven from outside, spaced about 16 inches apart, and set up over clinch rings on both ends. Both sternposts to be fastened at upper deck beams with driftbolts.

Shaft log.—Shaft log will be fastened from each side into deadwood and keelson with 1⅛-inch driftbolts spaced about 18 inches apart.

Deadwoods.—The forward and after deadwoods to be fastened with 1¼-inch driftbolts about 30 inches long, spaced about 22 inches apart, one timber fastened into the other, ends of deadwood timbers to be toe fastened with driftbolts.

Rudderpost.—To have tenon into keel and fastened same as sternpost. The upper end to be fastened into arch timbers and deck beams with 1¼-inch bolts about 30 inches long, spaced 16 inches apart, driven from outside over clinch rings.

Horn timbers.—To be through fastened from each side with 1¼-inch screw bolts staggered and spaced about 18 inches apart

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driven through and wedged on both ends. Tie-rods and screw bolts, where necessary, set up in large, heavy plate washers.

Keel.—The scarfs in keel to be fastened with eight 1¼-inch bolts, set up over clinch rings at both ends.

Shoe.—The shoe will be fastended to keel with $\frac{7}{16}$ by 8 inch spikes, spaced 12 inches apart, counterbored and plugged.

Frames.—The frame timbers to be fastened together with 1¼-inch treenails and ⅞-inch driftbolts. The number of fastenings to be as shown on midship section. As the frames are raised and placed in position they will be fastened to keel with two 1¼-inch driftbolts.

The cant and half frames forward and aft shall be bolted to deadwoods with six bolts in each half, four to be 1¼-inch and two 1⅛-inch. At least two of the 1¼-inch bolts will extend from (half) frame on the other side through deadwood and set up over clinch rings.

Stem and aprons.—To be fastened with 1⅜-inch bolts, 16-inch centers, driven from outside of stem and set up on clinch rings on inside apron.

The stem and stem gripe connected to the keel with a large knee and will have at least twelve 1⅜-inch bolts driven from the outside of stem and stem gripe and keel through knee or deadwoods and keelsons and set up over clinch rings.

Knightheads.—To be fastened to stem with 1⅜-inch bolts spaced 16 inches apart. About one-half of these bolts to extend through both knightheads and stem set up over clinch rings. Hawse pipe timbers to be fastened with driftbolts in similar manner.

Outside and inside sternposts.—Each post to have a tenon 5 by 12 inches and through keel, fastened with two 1⅜-inch treenails. The inside sternpost to be connected to keel with large wood knee, fastened with ten 1⅜-inch bolts, the bolts through keel to be set up both ends over clinch rings, the bolts into sternpost driven over clinch rings. The sternposts to be fastened together with 1⅜-inch bolts, driven from outside, spaced about 16 inches apart, and set up over clinch rings on both ends. Both sternposts to be fastened at upper deck beams with driftbolts.

Shaft log.—Shaft log will be fastened from each side into deadwood and keelson with 1⅜-inch driftbolts spaced about 18 inches apart.

Deadwoods.—The forward and after deadwoods to be fastened with 1¼-inch driftbolts about 30 inches long, spaced about 24 inches apart, one timber fastened into the other, ends of deadwood timbers to be toe fastened with driftbolts.

Rudderpost.—To have tenon into keel and fastened same as sternpost. The upper end to be fastened into arch timbers and deck beams with 1¼-inch bolts about 30 inches long, spaced 16 inches apart, driven from outside over clinch rings.

Horn timbers.—To be through fastened from each side with 1¼-inch screw bolts staggered and spaced about 18 inches apart.

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Wheel port and arch framing.—Arch knees to be fastened to sternpost and rudderpost with about ten 1¼-inch bolts driven from outside over clinch rings. Arch timbers fastened with 1¼-inch driftbolts about 30 inches long, spaced about 18 inches apart, one timber fastened into the next timber.

Knuckle rim and poop circle framing.—To be fastened with 1¼-inch bolts, spaced about 24 inches apart, bolts driven over rings and through bolts clinched over rings on both ends, as shown on plan.

Keelsons.—The keel and keelsons to be fastened as shown on fastening plan. Sister keelsons to be edge-bolted as shown, with 1⅜-inch bolts, spaced about 30 inches apart, driven alternately from side to side full length and set up over clinch rings.

Ceiling.—Beginning with the first streak on the floor next to keelsons all ceiling will be edge-bolted in every streak with 1⅛-inch bolts, alternating every other frame space. These bolts are to go through two streaks and half through the third streak. The last streak of clamps to have bolts in every frame space at the scarf and for 8 feet each side of scarf.

The ceiling to be fastened to each frame with two 1-inch headed driftbolts for 8-inch and 10-inch ceiling and 1¼-inch driftbolts for bilge ceiling, driven from the inside to within 1 inch of the outside of frame and headed over clinch rings on the inside.

Girder keelsons.—The first or lock streak fastened at each frame with 1⅛-inch driftbolts driven over rings to within 1 inch from outside frame, second and third streak each fastened at each frame with 1⅛-inch driftbolts driven over clinch rings to within 1 inch from outside of frame.

Planking.—The garboard streak, in addition to the through fastening for sister keelsons, will be fastened to each frame with four 1-inch headed driftbolts 18 inches long and edge-bolted to keel with one 1 by 36 inch bolt every second frame space as far forward and aft as possible. The second garboard streak will be fastened the same as the first, except bolts are to be 2 inches shorter.

The bottom planks will be fastened to frame with ⅝-inch bolts driven over clinch rings or four ½ by 10 inch spikes. The bilge and side planking from bilge to deck will be fastened with four ⅝-inch bolts driven over clinch rings or four ½ by 12 inch spikes. All the planking to have in addition to bolt or spike fastening four treenails in each frame for the wide planking; for the narrow planking around the bilge and above two treenails, all full length, wedged on outside of planking and inside of ceiling with oak wedges. All butts in planking to have a ⅞-inch headed bolt clinched over rings on ceiling. All plank fastening driven over rings or spike fastening to be plugged.

Decking.—The upper deck will be fastened with two ½ by 8 inch spikes in each beam.

The bridge, forecastle, and poop deck will be fastened with two ⅝ by 7 inch spikes in each beam.

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Bulwarks shall be fastened with ⅜ by 7 inch spikes.

Bridge, poop, and forecastle head planking.—Fastened with ½ by 8 inch spikes, two in each frame. Fastening plugged.

Upper-deck beams will be fastened to clamp with two 1⅛ by 30 inch bolts.

Hold beams will be fastened to ceiling clamp streak with two 1⅛-inch bolts 30 inches long.

Waterways will be fastened to beams with two 1-inch bolts in each streak and to frame with two 1⅛-inch bolts driven from outside of frame and clinched over rings on inside.

Pointers and hooks.—The pointers will be fastened to ceiling with two 1¼-inch bolts driven from outside of each frame and headed over clinch rings. The hook shall be fastened with sixteen 1¼-inch bolts, 4 driven into apron, and deadwoods, and sternpost, and 6 on each side, driven from outside of frame (where possible) and clinched over rings on inside.

Stanchions will be fastened at bottom end with two ⅞-inch bolts driven into keelson, and at top end, as shown on plan, also fastened through hold beams as shown. Heads of wing stanchions fastened with two ⅞-inch bolts driven up into girder timber.

Rail and stringers will be fastened to stanchions with one ⅞-inch headed bolt 16 inches long and to stringers with ¾ by 15 inch headed bolts spaced 18 inches apart. Stringers to be fastened to stanchions with two ½ by 8 inch spikes.

Mast partners.—Fastened with six 1⅜-inch bolts, three each side of mast, set up over clinch rings at both ends.

Knees.—Lodging and stanchion knees to be fastened as shown on plan.

Coamings.—End-hatch coamings and end coamings of engine and boiler hatches will be fastened to deck frame with 1-inch bolts spaced about 18 inches apart.

Ceiling in bridge, forecastle, and poop.—To be fastened with ⅜ by 7 inch spikes, two in each streak at each frame.

Continuous deck girders.—To be fastened with 1⅛-inch screw bolts, staggered, and spaced about 36 inches apart. Header timber to be fastened to ends of short beams with ⅞-inch driftbolts.

Bulkheads.—Water-tight bulkheads and tank bulkheads to be fastened with ½ by 8 inch spikes into studding, and the two thicknesses spike fastened between studding with short spikes. Bridge, forecastle, and poop-end bulkheads to be edge bolted with ⅞-inch bolts spaced about 24 inches apart. through one plank well into the next plank, and to be spike fastened to the studding.

Shaft tunnel.—To be edge bolted with ⅞-inch bolts, spaced about 30 inches apart, passing through two planks into the next.

Hold-beam shelf timbers.—To be fastened as shown on fastening plan.

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Upper-deck shelf timbers and clamps.—To be fastened as shown on fastening plan, also bridge, poop, and forecastle shelfs and clamps.

Coal bunkers.—To be nail fastened to studding.

Engine and boiler keelsons.—To be fastened in same manner as main keelsons, as shown on fastening plan.

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1. MASTS.

There will be two (2) Oregon pine pole masts of length and dimensions as shown on plans. Masts will be of selected, sound, and new-growth sticks.

2. CARGO BOOMS.

There will be eight cargo booms of Oregon pine of suitable diameter and strength for handling cargo equal to about five-ton lift. The booms will be attached to gooseneck bands on the masts. All booms will be arranged to stow in boom rests as shown. The cargo booms and gear will be tested before delivery of vessel.

3. VENTILATORS.

Natural ventilation by means of metal ventilators and cowls will be provided. Ventilators will be of suitable size, and as shown on arrangement plans for ventilation of cargo holds, bridge, poop, and forecastle, storerooms, wash, and toilet rooms, galley, etc. All ventilators will extend to weather deck and will be fitted with cowls. The ventilators for cargo spaces will be provided with wooden plugs and canvas covers for use in bad weather when cowls are removed. Cowls will be galvanized.

Large ventilators furnished by owners and installed by builders, arranged, and of a size, as shown on plan, will be fitted for engine and firerooms, with cowls fitted with turning gear operated from below. Wherever required, ventilators to be tapped for ventilation at various places.

4. AIR PORTS AND FIXED LIGHTS.

Air ports will be fitted in hull and deck houses as shown on plan and otherwise as may be found necessary. In midship and poop-deck house 14-inch clear glass size, and in hull at forecastle and poop 10-inch clear glass size. The air ports in hull to be fitted with storm shutters inside.

All air ports will be of composition and have necessary locking arrangement and suitable thickness of glass. The surfaces for operating the ports, such as locking screws and frames around glass, will be rough finished and painted. Suitable drip pans without drains will be fitted where required. Wind scoops for air ports will be provided for all crew's living quarters and for a part of the air ports in galley, and mess rooms.

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Fixed lights with composition or malleable-iron frames will be fitted in outside wooden doors where required and in engine casing and light trunks as may be necessary.

5. RAILS AND STANCHIONS.

Forged wrought iron or semisteel, galvanized stanchion with pipe rails will be fitted around poop, bridge, forecastle decks and house decks as shown on plan. The top rail will be 1¼-inch and the lower rails ¾-inch galvanized-iron pipe. The required handrails and stanchions for ladders fitted where necessary, grab rails as specified elsewhere. Brass stanchions and two brass-pipe rails will be fitted on top of wheelhouse.

6. AWNING STANCHIONS AND RIDGE BARS.

Galvanized-iron pipe awning stanchions with galvanized-iron pipe spreaders and wooden ridge will be fitted for awnings abreast and around the stern at deck house aft on poop, abreast of officers deck house amidships, between officers and wireless house abreast of wheelhouse, over navigating bridge and over forcastle head. Wood or brass jackstays will be fitted at wheelhouse, and wood or galvanized iron jackstays otherwise as required.

7. OUTSIDE AND INSIDE LADDERS.

Ladders of builders' standard type with galvanized pipe handrails and fittings will be provided at each side of navigating bridge, and similar ladders each side from bridge deck and from forecastle head and poop to deck.

For access outside to decks and tops of houses straight wood ladders will be fitted. Where handrails of these ladders land on canvas, sheet lead will be fitted. For access to holds, peaks, and in chain lockers and storeroom spaces suitable ladders or rungs on bulkheads will be provided. Iron ladders for engine room as specified elsewhere.

8. ACCOMMODATION LADDER.

Accommodation ladder with fittings, tackle, and gear as necessary for the service of this vessel will be provided and arranged so as to ship at port or starboard side. Ladder made of wood, all fittings will be galvanized. Suitable platforms and fittings provided for landings. Ladder made in two sections if required.

9. JACOB'S LADDER.

There will be furnished two Jacob's ladders for landing over side of vessel, of length to reach the water when vessel is light.

10. BOOM RESTS.

Boom rests of wood will be fitted for stowing the cargo booms, and will be provided with galvanized-iron straps, toggle pins and chains for clamping the booms down. Where booms

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stow in way of rails, portable chains will be fitted. Boom rests lined with sheet lead and booms covered with sheet iron in way of same.

11. BITS, CHOCKS, AND CLEATS.

Cast-iron mooring bits and chocks of suitable size will be fitted as shown on plans. Bits and chocks of builder's standard pattern.

12. HATCH COVERS.

Hatch covers will be fitted in built-up sections made of spruce, yellow pine, or fir 3 inches thick, fitted with lifting bolts of half-round bar, through bolted. The covers will be arranged to lay athwartship on hatch wood strong backs, and in suitable lengths and width. Cast steel or wrought-iron cleats will be fitted as hatch coamings, with wedging bars. Locking bars to be provided.

13. WOODEN GRATINGS.

Suitable wooden gratings will be fitted in chain lockers and storerooms where required, and otherwise about the ship as found necessary. Wooden gratings for decks specified elsewhere.

14. SHELVES AND BINS.

Necessary shelves and bins of wood will be fitted up for boatswain, carpenter, steward's stores, ship's and engineer's storerooms, and otherwise about the ship as found necessary.

15. INSULATION.

The boiler hatch for its entire height will be insulated on the inside with asbestos board or pressed cork, the engine hatch insulated in similar manner where found necessary. Deck, boilers, coal bunkers, and other woodwork will be insulated where necessary with asbestos protected with galvanized sheet iron.

16. BOW CHOCK.

Will be fitted from stem as shown. Pipe rails will end against this chock and be fastened to same.

17. WOODEN BEDS.

Suitable wooden beds will be fitted under windlass mooring bits, chocks, etc., and otherwise as necessary. Wood beds for stowing anchors, and other outfit and gear, together with lashing rings will be provided as required. The holding-down bolts will be hove up underneath with nuts fitted with grommets, and fore-and-aft wood filling between beams will be fitted.

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JOINER WORK.

1. DESCRIPTION AND MATERIAL.

Layout will be as shown on deck arrangement plans. The kind of wood and sizes will be as shown on midship section. The top of houses will be tongued and grooved, covered with canvas, laid on felt, except the deck of small house on poop, which will be a calked deck. Main house on bridge deck, the officers' house above, and the wheelhouse, also the house on poop deck, will be of wood, finished outside with fir or yellow pine. Wooden skylights will be of fir or white pine, painted; wooden rails of fir or yellow pine. Outside doors to deck houses and wheelhouse of fir or white pine. All joiner work will be efficiently fastened, and galvanized fastenings will be used. For the houses galvanized-iron screwed bolts will be used in strength members, and for securing sills and plates holding down tie-rods will be fitted; hove up with nuts on plate washers. All fastening of woodwork adjacent to standard compass and as far as practicable about the wheelhouse will be of composition or brass. Hardware throughout will be of composition as specified elsewhere. All materials will be of good grade and equal to best practice for ship joinery. No undue sap, checked, spotted, or knotted material will be accepted. For glazing, white-lead putty will be used; paint of pure white lead and oil mixture. No patent paints will be accepted other than specified elsewhere. Filling, varnish, and hardwood finish material equal to the best. Insulation material of good quality compressed board cork or asbestos. Metal fittings of iron, galvanized. Screens in screen doors fitted with brass or copper wire. Hinges will be fitted with composition pine.

2. JOINER DECKS.

These decks will be 1⅛-inch finished thickness, tongued and grooved, chamfered on under side, fir or cypress. These decks will be covered with No. 2 canvas, laid on felt, and made watertight, except deck of wheelhouse, where No. 4 canvas may be used. Canvas will be laid on these joiner decks inside of house.

3. LOWER HOUSES ON BRIDGE DECK.

Lower houses amidships will be of size as shown on plan. Sill, 8 by 10 inches, of fir or yellow pine; plate, 4 by 6 inches, yellow pine or fir; studding, of yellow pine or fir, 4 by 4 inches, spaced about 27 inches. Tie-rods, ¾-inch galvanized iron, hove up at under side with nuts. Carlins, of yellow pine or fir, 3 by 6 inches, spaced about 27 inches. 2 by 8 inch fir wood or yellow pine water battens to be fitted. To have suitable molding trim around the top. The outside finish of these houses will be 2 inches thick, yellow pine or fir, laid fore and aft, calked and payed with putty. For windows in these houses 14-inch composition air ports to be fitted, no blinds.

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The inside finish of these houses will be as specified elsewhere. Carlin and deck extended to side of ship, with a 6 by 10 inch yellow pine or fir wood, carried with wrought-iron solid or pipe supports. Hanging wood knees to be fitted as shown on plan.

4. SMALL HOUSE ON POOP DECK.

To be framed and sheathed in similar manner as lower houses on bridge deck. This house to have a 3 by 3 inch yellow pine or fir wood calked deck. No sheathing inside, but diagonally braced with 3 by 8 inch timber, for rack caused by gun recoil, and house deck to be stanchioned with 6 by 6 inch timbers under gun foundation.

5. OFFICERS' HOUSE AMIDSHIPS AND WIRELESS HOUSE.

These houses to be of size as shown on plan. Sill 6 by 6 inches of yellow pine or fir; plate 4 by 6 inches of yellow pine or fir; studding of yellow pine or fir, 4 by 4 inches, spaced about 27 inches. Tie-rods ⅝-inch galvanized iron, hove up at under side with nuts. Carlins of yellow pine or fir 3 by 5 inches, spaced about 27 inches; 2 by 8 inch yellow pine or fir water battens to be fitted; to have suitable molding trim around the top. The outside finish of these houses will be ⅞-inch tongued and grooved chamfered cypress or fir. For windows in these houses, 14-inch composition air ports to be fitted; no blinds. The inside finish of these houses will be as specified elsewhere.

6. WHEEL HOUSE AND CHART ROOM.

This house will be size shown on plan. Sill 6 by 6 inches of fir or yellow pine; plate 3 by 5 inches of fir or yellow pine; studding of fir or yellow pine 3 by 3 inches, spaced to suit windows. Tie-rods of ⅝-inch composition, hove up on under side with nuts. Carlins 3 by 4 inch yellow pine or fir, spaced about 24 inches. Deck 1⅛ inches thick; tongued and grooved fir or cypress, chamfered on under side, and covered with No. 4 canvas laid on felt; 2 by 8 inch water battens; to have suitable molding trim around the top. The outside finish of this house will be ⅞-inch fir or cypress tongued and grooved chamfered. Sash for wheelhouse will be of yellow pine or fir, fitted with lead sash weights, arranged to drop in lead-lined pockets, scuppered and provided with storm shutters and fixed lights, and glass in sash will be $\frac{3}{16}$ inch thick. No wooden blinds will be fitted at inside of windows. The inside finish for this house will ⅞-inch tongued and grooved chamfered fir or cypress. A wooden straight ladder will be fitted for access to top of house.

7. NAVIGATING BRIDGE.

Navigating bridge will be forward on deck of officers' deck house, inclosed solid, across forward and aft each side, as shown, to height of about 3 feet 6 inches above wood deck.

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There will be a 5 by 2½ inches fir or yellow-pine rail worked around front of bridge at ends and aft as shown. In way of this rail will be a fir or yellow-pine sill; between the rail and sill will be staved up with ⅞ by 2½ inches tongued and grooved chamfered fir or cypress. Wood battens will be fitted inside for securing and stiffening the staving, and the whole will be braced with metal braces. The bridge will be covered with a wood grating, as specified elsewhere. Bridge ends will be braced with wrought-iron diagonal supports.

8. OUTSIDE SCUPPERS.

Necessary scuppers will be fitted of galvanized-iron pipe to drain waterways of decks of houses and bridge. Scupper pipes will lead from one deck and drain into the waterway of the next and so arranged as to blow the least water possible. Pipes will be securely clamped. Strainers will be fitted.

9. OUTSIDE LADDERS.

Outside ladders of wood will be fitted where required; they will be of yellow pine or fir, handrails of galvanized-iron pipe, with threads of galvanized iron.

10. INSIDE STAIRWAY.

From captain's quarters to wheelhouse built of fir, fitted with wood handrail, rubber treads, brass nosing and toe plates. A newel post, rail and wood staving at top opening of stairway.

11. CAPPING BEAMS AND OVERHEAD CEILING.

Beams in owner's and officers' rooms, in officers' mess room, will be capped and finished with fir or cypress to match surrounding finish. No overhead ceiling fitted in any space.

12. CEILING IN HOUSES.

The deck houses will be ceiled inside with ⅞-inch tongued and grooved fir or cypress.

13. DIVISION BULKHEADS.

Fore and aft and thwartship division bulkheads of wood will be double diagonal thickness of fir or cypress, ⅞-inch, tongued and grooved, chamfered, secured in suitable base sills and overhead at deck.

14. AIR PORT TRIM.

The trim around air ports in officers' rooms and mess rooms will be of fir or cypress. No blinds will be fitted except as necessary to screen light at night at forward end of deck house. At air ports the trim work will be so fitted as to take care of leak for air ports; lead or brass drip pan provided if necessary. No scuppers or drains will be fitted for the drip pans.

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15. OUTSIDE DOORS.

All outside doors in deck houses will be of fir or yellow pine, solid framed with solid flush panels not less than 2¼ inches in thickness. The door trim work to match finish of adjacent joiner work. Sills will be of yellow pine or fir, covered with galvanized iron as specified elsewhere. Doors where necessary fitted with fixed lights with composition or malleable iron frames. Bottom of doors leaded where required.

16. INSIDE DOORS.

Doors entering rooms from inside passageway or connecting the rooms will be of same material as adjacent finish and will be framed and paneled, not less than 1⅜ inches thick. Extra wide doors will be fitted where necessary. Half doors will be fitted for toilet stalls.

17. INSIDE FINISH OF OFFICERS' AND OTHER ROOMS.

All to have hardwood berths with drawers under, settees, wardrobe, and toilet rack of hardwood. Remainder of rooms finished ⅞-inch tongued and grooved cypress or fir, painted. Mirror, composition hooks, and other necessary fittings. Settees will have lockers under.

18. OFFICERS' AND PETTY OFFICERS' MESS ROOM.

Will be located as shown. Inside finish will be ⅞-inch tongued and grooved fir or yellow pine, staving to wainscot line, softwood and paint above, sideboards of hardwood. In addition, to have all necessary glass racks, sideboards, and medicine cabinet. Sideboard will be of approved pattern. There will be a hardwood table, together with necessary hardwood revolving chairs with metal base.

19. PANTRY SPACE.

Located in officers' mess room and galley and to have steam table, sink, and refrigerator, as specified elsewhere. In addition, fitted with dish racks, drawers, closets, glass racks, and cup hooks.

20. GALLEY.

Will be located as shown, fitted with range, boiler, coal box, sinks, pumps, and floor covered as specified elsewhere. In addition, to be provided with dressers, lined with brass or lead. Dresser tops will be of hardwood. All necessary outfit to fit galley up complete.

21. STEWARD'S WET AND DRY STORES.

Will be located as shown. Fitted up with zinc or tin lined bins, shelves, racks, etc. The steward's storerooms to have heavy screen wire doors for ventilation.

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22. OFFICERS', PETTY OFFICERS', AND ENGINEERS' TOILETS AND WASH ROOMS.

Will be located as shown. Finish of these spaces will be fir or cypress; floor covering and plumbing fixtures to be provided as specified elsewhere. Doors to toilet stalls will be of hardwood.

23. LAMP ROOM.

Located as shown. All inside work will be lined with galvanized sheet iron. There will be provided two 50-gallon oil tanks, and two 25-gallon tanks, with draw-off faucet and filling hole on top. Hooks and racks for side, running, and other lights. Steam connection will be provided, as required by law.

24. ENGINEERS' STOREROOM.

There will be an engineers' storeroom located as shown. Shelves and bins will be provided as required. Tools, gear, and outfit will be placed and secured. Doors to have padlock and hasp.

25. OILER'S ROOM.

Will be located as shown. Finish of this room and plumbing fixtures as specified elsewhere. In addition, to be provided with three galvanized pipe berths, two drawers fitted under lower berth, three metal lockers, wood settee.

26. QUARTERMASTER'S ROOM.

Will be as shown; inside of room finish and plumbing fixtures as specified elsewhere. In addition, room will be provided with three fixed berths, with drawers under, one settee, and three closets.

27. MESSMEN'S AND MESSBOYS' ROOM.

Will be located as shown. Inside of rooms finished and plumbing fixtures as specified elsewhere. In addition, to be provided with two fixed berths with drawers under; closets and settee as shown on plan.

28. SAILORS' AND FIREMEN'S MESS ROOMS.

Will be of size and location as shown. Mess rooms fitted with mess table and benches of size as shown. Tables and benches will be of fir, ash, or yellow pine. Dish racks and cup hooks will be provided.

29. COOK'S ROOM.

Will be located as shown. Inside finish of this room and plumbing fixtures as specified elsewhere; in addition, to be provided with 2 berths, drawers under lower berth, one flat-top desk 24 by 36 inches. One settee and clothes closets.

30. CAPTAIN'S BEDROOM, BATH AND TOILET.

Will be located in deck house of size as shown on plan. Room will be bright finish in fir or yellow pine, paneled, ceiling painted.

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To be supplied with plumbing fixtures as specified elsewhere. In addition, there is to be provided and fitted, one fir or yellow pine berth 36 inches wide by 76 inches long, with chest of drawers under. Settee hardwood with settee back frame fitted, and drawers under. Room will be provided with wardrobe, closets, and roll-top desk.

Captain's bath and toilet will be located in deck house adjoining captain's bedroom. This room will be finished in white enamel paint, wainscoting; tile floor and plumbing fixtures as specified elsewhere.

31. CHART ROOM.

Will be located aft in wheelhouse. This room will be finished bright in tongued and grooved fir or yellow pine, ceiling painted. In addition, will be provided with chart table 3 by 6 feet, with chart drawers underneath; instrument case, bookcase, closet, and roll-top desk of hardwood.

32. FIRST, SECOND, AND THIRD OFFICERS' ROOMS, LIEUTENANT'S AND GUNNERS' ROOMS.

These rooms will be located in deck houses as shown. Finish of rooms will be tongued and grooved fir or cypress, painted. Plumbing fixtures as specified elsewhere. In addition, to be provided with hardwood berth 28 inches wide by 72 inches long, with drawers under. Settee of hardwood with drawers under. Clothes closets, mirror, toilet rack of hardwood, and hardwood flat-top desk for each room.

33. SPARE ROOM.

Located as shown, and will be finished and provided with berth, settee, closets, same as first officer's room. Berth 30 inches wide, with drawers under.

34. WIRELESS ROOM.

In deck house as shown for wireless operators, which will be fitted with two fixed berths with drawers under, settee, wardrobe, mirror, instrument bench, and necessary outfit. The finish of this room same as officers' rooms.

35. CHIEF ENGINEER'S ROOM.

Finish of room will be tongued and grooved fir or cypress, painted; plumbing fixtures as specified elsewhere. In addition, to be provided with fir or yellow pine berth 28 inches wide by 72 inches long, with drawers under. Hardwood settee and drawers under. Hardwood clothes closet, mirror, flat-top desk.

36. FIRST ASSISTANT ENGINEER'S ROOM.

Finish of room will be tongued and grooved fir or cypress, painted, and fitted with plumbing fixtures as specified elsewhere. In addition, to have fir or yellow pine berth 28 inches wide by 72 inches long, with drawers under. Hardwood settee and drawers under, clothes closet, mirror, flat-top desk.

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37. SECOND AND THIRD ASSISTANT ENGINEERS' ROOMS.

Will be located as shown; two rooms. Finish of these rooms will be tongued and grooved fir or cypress, painted, and fitted with plumbing fixtures as specified elsewhere. In addition, to be provided with fir or yellow pine berth 26 inches wide by 72 inches long, with drawers under berth. Hardwood settee and lockers under, closet, mirror, and small flat-top desk.

38. SAILORS' AND FIREMEN'S QUARTERS.

Sailors' and firemen's quarters will be in the forecastle head. These quarters will be fitted up with galvanized-iron pipe portable berths, with wire spring bottoms. There will be provided in these quarters suitable number of metal lockers and wood-seat benches.

39. GUN CREWS' QUARTERS.

Quarters for gun crew will be in the poop. These quarters will be fitted up with galvanized-iron pipe portable berths, with wire-spring bottoms. There will be provided in these quarters suitable number of metal lockers and wood-seat benches.

40. GALLEY COAL.

There will be in or near the galley, as shown on plan, a coal box for hard coal of about 4 tons capacity. To have hinged cover and sliding door in front.

41. CARPENTER SHOP AND SHIP'S STORES.

As shown, will be a carpenter shop; to have work bench, vise, and other outfit as required. Also a ship's storeroom fitted with shelves and bins as may be necessary.

42. PAINT AND OIL STORES.

Located as shown; space will be for paint and oil stores; to have steam connection, metal-lined shelves, and supplied with the following galvanized-iron tanks:

One 10-gallon for boiled oil.
One 10-gallon for raw oil.
One 20-gallon for turpentine.
One 5-gallon for lamp oil.
One 5-gallon for colza oil.
One 5-gallon for mineral sperm oil.
Oil stowage tanks to be furnished by owners.

43. TILING, FLOOR COVERING, AND CEMENT.

Vitrified tiling of hexagonal shape will be laid in captain's bathroom, officers', petty officers', and engineers' wash rooms. The captain's bathroom will also be fitted with glazed tile wainscoting about 4 feet in height.

Floors in sailors', firemens', and gun crews' wash rooms will be lined with sheet lead, flashed up at sides.

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Red pressed brick will be laid on the floor in galley. Floors in all living quarters, in midship bridge houses and afterhouse, also officers', petty officers', sailors', and firemens' mess rooms, passageways, and storerooms, will be the calked wood deck, and for the deck houses a joiner deck. In all living rooms, including the chart room, floor to be covered with $\frac{1}{8}$-inch plain linoleum. The floors of bathroom and wash rooms will be lined with sheet lead, flashed up at sides, and floors tested for water-tightness before the tiling is laid.

44. INSIDE SCUPPERS.

Inside scuppers will be fitted where necessary for the drainage of toilets, bathroom, wash rooms, and quarters, passageways, and in poop and forecastle head. Ice houses and all other compartments about the vessel, where required, to be drained. Pantry, galley, mess rooms, and steering engine room, will be fitted with scuppers. All scuppers will have suitable strainers.

45. STOWING OF LIFE PRESERVERS.

Life preservers for captain's, licensed officers', petty officers', engineers', stewards' rooms, and crew quarters will be stowed overhead in wood racks fastened to ceiling.

46. MOSQUITO SCREENS.

Inside mosquito screen doors and screens for ports, of copper or brass wire, will be provided for officers' and crews' living quarters, for doors to mess rooms; also screens to air ports in way of mess rooms.

47. HARDWARE.

Hardware throughout will be of composition in locks, catches, etc., no iron to be used. All important composition hardware will be fitted complete for every department of the vessel. Hinges for all wooden doors will be of brass; extra strong hinges for metal doors. Throughout living quarters required number of hooks to be provided. Each door opening outboard to be fitted with composition hook so as to hook against house when open. Screen-door hooks to hook open will be provided. Doors to galley and stewards' storerooms will be fitted with solid composition Yale latch lock.

48. SKYLIGHT LIFTING GEAR.

For engine-room skylight, screw or quadrant gear with worm will be fitted in a manner to efficiently and quickly handle the skylight from below. For other skylights, quadrant lifts will be fitted for opening sash from outside.

49. PAINTING AND FINISHING JOINER WORK.

Mortising and tenoning of doors and joiner work will be put together with paint, glue, or shellac, as the case may be. Knots to be shellacked before coated with paint, and nail heads will be

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shellacked or coated with paint before puttying. Putty used for glazing and generally for joiner work will be white lead putty. Fir or soft woodwork will be painted to receive not less than three coats, after priming, of best quality lead-and-oil paint. All bright work for the various joiner work to be treated with good quality wood filler and color, then treated with sufficient number of coats of best interior varnish or wood finish to get the finish and results necessary for this class of work. All hardwood will be rubbed down to a dull and smooth finish. All surfaces of wood exposed to the air not treated for finish to be primed, to prevent warping.

50. GRAB RAILS.

Inside and outside grab rails will be provided about the vessel where necessary, of wood or galvanized-iron pipe with galvanized iron sockets, wooden grab rails inside of wheelhouse. Suitable grab rails will be fitted at upper berths and in officers' and petty officers' toilets and crew's wash rooms.

51. METAL SILLS, TOE PLATES, ETC.

Outside wooden doorsills will be covered with sheet brass or lead, brass toe plates and nosings provided at stairways where required. Necessary protecting plates will be fitted swinging doors.

52. (Omitted.)

53. METAL TREADS.

Galvanized cast-iron metal treads will be fitted on outside wood ladders, and closed ladders will have treads covered with sheet lead, studded with brass nails; inside ladders and stairways for crew covered with sheet lead where not of iron.

54. WIRE SCREENS, DOORS, AND GATES.

Heavy metal screen door at galley and steward's storeroom, which may be kept locked, permitting ventilation.

55. WOOD GRATINGS.

Hardwood gratings will be fitted in wheelhouse, on navigating bridge. Fir or yellow-pine wood slat grating will be laid on floor in ice houses and in ice boxes; slat wood gratings will be provided in storerooms and for coiling lines on.

56. MISCELLANEOUS.

There will be provided wooden boxes for stowing of deck gear, placed on house deck. Hardwood boxes for navigating glasses about wheelhouse. Galvanized sheet-iron wind scoops will be provided for air ports in living quarters. Hardwood frames to match adjacent finish with glass for notices, licenses, billboards, etc., made and put up as required.

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GENERAL UNDER HULL.

1. INSCRIPTION, NUMBERS, ETC.

The name of the vessel and hailing port will be put on in composition letters at the stern and the name on each side at the bow. The inscription to be repeated in stenciled letters on lifeboats, life buoys, fire buckets, etc. Boats to have the owner's private mark each side at the bow. Water draft marks to be cut in each side of sternpost and stem to the required load draft and painted white, as usual, of size of law requirements. Figures on stem to be marked down to 4-foot water line. All accommodations will be marked by plates. Staterooms to be labeled as required. Living quarters for crew, etc., to be certified to by law and numbers cut in and painted. Rules, regulations, station bills, etc., as necessary to be framed in glass and put in their proper places. The destination of all casings of pump rods, sounding tubes, steam cocks, etc., will be engraved on the rings of frames or the brass covers closing the various tubes. A set of keys and spanners for all the specified cocks, pipe plugs, and pump gear will be supplied and marked. On the frame or rings of the brass covers of manifold valves, etc., the direction for maneuvering will be indicated by arrows, open and shut. Cargo hatch covers and hatch strong backs will be marked.

2. BOAT DAVITS AND SKIDS.

Boat davits will be of the swinging type, of suitable size, fitted for two lifeboats. The boats will rest on wooden chocks hinged on the outboard side. Swinging davits, with necessary bearings and footsteps, will be fitted for handling one 16-foot working boat complete, with blocks, fall, and tackle; skids the same as for lifeboats, [redacted]. Boat davits will comply with United States inspection laws as regards type and operation.

3. LIFEBOATS AND WORKING BOAT.

There will be two 24 feet by 6 feet 6 inches by 2 feet 9 inches metallic lifeboats, smoothly built, fitted with all necessary blocks, falls, and tackle complete, and to have standard or other releasing hooks. To have all necessary equipment to meet steamboat-inspection requirements and fitted with canvas covers. One working boat of wood, 16 by 5 feet by 2 feet 3 inches, on deck, located as shown.

4. RIGGING, BLOCKS, AND GEAR.

The standard rigging will be of steel wire, consisting of four main shrouds on each side at each mast and one head stay for foremast and one head stay for mainmast. Shrouds will be set up at lower ends, with wrought-iron pipe turnbuckles of suitable character fitted with solid rigging hearts and provided with sheer poles and iron spreaders, and iron ratlines will be fitted. Spreaders, sheer poles, and ratlines will be galvanized.

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Shrouds and head stays will be set up on end and will be served at ends only. Necessary rigging blocks of galvanized steel for cargo booms of the Boston and Lockport or McMillan or other approved make. Blocks where required will be steel. All hoisting blocks will be metaline bushed.

Necessary blocks for halyards and cargo vang purchases will be provided. Necessary signal halyards and running rigging will be provided. Smokestack steel guys of wire will be provided and set up with turnbuckles. All wire rigging will be galvanized.

Cargo booms will be rigged with topping lift tackle having double steel blocks with shackles and ½-inch galvanized flexible steel-wire falls. Cargo whip blocks will be steel with ½-inch galvanized flexible steel-wire falls. Lead blocks from heel of derricks will be steel; snatch blocks of steel. Where necessary blocks will be fitted with swivel. All blocks will have metal sheaves. Guy pennants for booms will be of galvanized steel wire of sufficient length and strength, with 8-inch wooden blocks with shackles and 2½-inch rope falls. The ironwork for all wooden blocks will be galvanized.

5. COVERS AND AWNINGS.

Canvas covers will be supplied for boats, winches exposed to weather, all ventilator cowls and all ventilator plugs, wire reels, sounding machine, telegraphs, steering wheels, and compasses exposed to weather. Three tarpaulins for each hatch on upper deck and hatch or poop deck, one of which will be waterproof.

Awnings will be fitted over bridge abreast of wheelhouse, at each side of midship officers' house, aft of officers' house to wireless house, over forecastle head, and over poop deck at each side of house and around the stern. Canvas dodger for bridge.

6. FLAGPOLES, LIGHT BOARDS, BUCKET RACKS, ETC.

There will be provided jack and ensign staffs fitted lignumvitæ trucks with composition sheaves. cleats, and signal halyards, secured in socket at bottom and clamp keeper above. Side-light boards in way of bridge, of size to meet law requirements, will be fitted. Steel head and range light boxes and screens at mast. Stern-light box, anchor-light gear; racks for securing life preservers, axes, and buckets; frames for license papers will be provided.

7. CLEATS, EYE AND RING BOLTS.

Necessary cleats, ringbolts, eyebolts, and all forgings of this character will be provided and fitted as may be found necessary for completely handling all gear doors and matters of this kind about the vessel. Ringbolts at hatch coamings and at deck waterway will be fitted as required.

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8. SMITH WORK.

Mast ironwork, gear for boats, gear for cargo and coaling booms, boat davits, davits and mounting for accommodation ladder, lead-line crane, reels, stanchions, chain plates, eye and ring bolts, hatch fittings, jackstays, belaying pins at derricks, boom rests. Smith work will be of good quality iron and workmanship; cast steel may be used when practicable; all to be galvanized. Hinges for wrought-iron doors will be of wrought iron with composition pins. Hinges for all wooden doors will be of bronze, extra strong. All metal near compasses will be of brass.

9. SHIP'S BELLS.

There will be two composition ship's bells, one 14-inch, located on forecastle head, polished and engraved with ship's name and date, secured in suitable belfry and so located as to convey sound in any direction. One 6-inch bell polished, fitted in front of wheelhouse.

10. NAME BOARDS.

Suitable size wood name boards will be put up at deck each side at top of wheelhouse, secured and placed clear of jackstays. To have sunken gilded letters, scroll, and carved ends.

11. ANCHORS, CABLES, HAWSERS, AND WARPS. (Furnished by owners.)

Anchors, chain cables, hawsers, and warps will be as required by American Bureau of Shipping, as follows:

2 bower anchors, each 4,725 pounds, stockless.
1 bower anchor, 4,025 pounds, stockless.
1 steam anchor, 1,855 pounds, stockless.
1 kedge anchor, 735 pounds, stockless.
All anchors of Baldt or other approved make.
240 fathoms 1⅞-inch stud link chain cable in 15-fathom shots.
75 fathoms, 1⅛-inch stream chain, or 4-inch circular steel wire, wire preferred.
105 fathoms, 12-inch circular hemp towline or 4-inch circular steel wire, wire on reel preferred.
180 fathoms, 7-inch circular hemp hawsers.
180 fathoms, 6-inch circular hemp warps.

Chain cable shackle pins will be fastened with brass pins for easy removing and cables coated with tar before stowing.

12. FLAGS. (Furnished by owners.)

Flags will be as follows:

2 house flags.
1 blue peter.
1 burgee.
1 Union Jack.
2 ensigns, 8 by 12 feet.
1 set code signals.
1 signal book.
1 azimuth book.

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13. NAVIGATING OUTFIT. (Furnished by owners.)

Will be as follows:

1 compass, Negus new make, in wheelhouse, 9-inch card.
1 Sir William Thompson standard compass on deck of wheelhouse, 10-inch card, with speaking tube to wheelhouse.
1 compass aft, Ritchie or Negus make, 9-inch card.
1 compass on bridge, Ritchie or Negus make, 9-inch card.
All compasses complete with magnets.
1 pair marine glasses, standard make, day.
1 pair marine glasses, standard make, night.
1 pelorus and stand.
1 azimuth and circle.
1 aneroid barometer, standard make.
1 Sir William Thompson's patent sounding machine.
1 fog horn, patent.
3 ship's clocks, 6-inch dial, eight-day, striking.
1 cherub log with spare rotator and line.
2 18-inch megaphones.
1 clinometer.
1 parallel ruler, 12-inch, ebony, best quality.
1 8-inch divider with separate pencil point.
1 set charts, Atlantic Ocean.
2 thermometers, standard make.
1 hydrometer.
1 telescope, standard make.
1 deep-sea hand lead and line, with reel for 120 fathoms, 30 pounds.
2 hand leads and lines, each 14 pounds.

14. UNITED STATES INSPECTION OUTFIT.

Will be supplied by the builders all in accordance with law requirements for a vessel of this character, consisting of life preservers, life buoys, fire hose with couplings, nozzles, spanners, distributing and stowing racks, fire axes and racks, fire buckets and racks, fire extinguishers, full set of running lights, masthead, range, and anchor light, all lifeboat equipments, etc., in sufficient quantity to pass the law requirements, equipped and certified for the total number of 45 persons to be carried for ocean service.

15. SIGNAL LIGHTS. (Supplied by the builders.)

2 oil anchor lights.
2 oil ruby globe signal lights.
1 oil stern light.
1 oil masthead light.
2 combination oil and electric side lights.
1 electric masthead light.
1 electric range light.

16. MISCELLANEOUS OUTFIT. (Supplied by the builders.)

2 life rings with ship's name.
45 life preservers.

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2 fire extinguishers.
8 fire axes.
20 fire buckets.

17. DECK OUTFIT.

The following deck outfit to be supplied by the builders:
4 mooring lines, 50 fathoms 4-inch circular, galvanized-steel wire rope.
1 coil of 90 fathoms 7-inch manila.
1 coil of 90 fathoms 6-inch manila.
2 coils of 120 fathoms each 4-inch, four-strand manila.
3 coils of 120 fathoms each 3-inch, three-strand manila.
2 coils of 120 fathoms each 2-inch, three-strand manila.
2 coils of 120 fathoms each 2½-inch, three-strand manila.
2 coils of 9-thread manila.
1 coil of signal halyards.
1 coil of 15-thread ratline line.
1 coil of spun yarn.
1 coil of marlin.
3 steel marlin spikes for wire.
2 wooden fids.
2 crowbars.
6 ring buoys to pass United States inspection.
4 large cork fenders.
2 chain slings, 10 feet by 1 inch.
2 chain slings, 10 feet by ¾ inch.
2 chain slings, 10 feet by ½ inch.
2 wire slings, 30 feet each, 1-inch wire thimble in each.
Fire hose rack and fire hose to pass United States inspection, brass nozzles and spanners.
100 feet of 1½-inch best rubber-lined canvas hose and couplings.
1 wooden ladder, from hurricane deck to reach lower holds.
6 wooden fenders.
4 fire axes.
4 fire extinguishers to pass United States inspection and 20 charges.
4 deck pails.
4 squilgees and handles.
6 holystones, frames, and handles.
1 pitch pot and ladle.
Iron bars over all the hatches to be fitted along with hatch battens.
100 wooden hatch wedges.
2 stages, hooks, and tackle for painting hull outside.
1 rope side ladder.
4 cork fenders.
2 rail grips.

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18. COOPER'S STORES. (Supplied by builders.)

1 water funnel.
1 tar bucket.
1 draw bucket.
1 steep tub.
4 mess kits.
8 deck buckets, galvanized iron.

19. CARPENTER'S STORES. (Supplied by builders.)

1 pitch pot and ladle.
1 grindstone, spindle, and trough.
2 claw hammers.
1 adze.
1 maul.
1 handsaw.
1 carpenter's ax.
1 shifting-screw key.
1 shifting key for deck valves.
2 sounding rods.
1 pump hook.
1 set punches and chisels.

20. BOATSWAIN'S STORES. (Supplied by builders.)

1 set weights and scales to 28 pounds.
1 copper water dipper.
3 brass padlocks.
2 crowbars.
4 marline spikes.
4 chain hooks.
2 bale hooks.
1 pair can hooks.
4 chisel scrapers.
4 rolling fenders.
4 hand spikes.
2 serving mallets.
2 serving boards

21. LAMPS. (Supplied by builders.)

Masthead lamp, brass.
Range light, masthead, brass.
2 anchor lights, brass.
2 bull's-eye lamps, brass.
2 sets side lights, brass.
All binnacle lights, brass.
2 hand lanterns, brass.
2 light ruby globes.
6 cargo lanterns.
2 forecastle lamps, brass.
6 coston lights for ring buoys.
1 brass lamp for wheelhouse.

All side, masthead, and anchor lamps to be regulation size and to be oil and electric.

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22. BLOCKS. (Supplied by builders.)

In addition to the regular cargo gear of the ships the following to be supplied for each vessel:

2 8-inch double blocks, wood, loose hooks, no becket.
2 8-inch double blocks, wood, loose hooks and becket.
2 10-inch snatch blocks, iron.
1 8-inch snatch block.
2 16-inch double iron blocks, loose hook and becket.
2 16-inch single iron blocks, loose hook and becket.
2 14-inch double iron blocks, loose hook and becket.
2 14-inch single iron blocks, loose hook and becket.
2 watch tackles.
1 relieving tackle.
All cargo gear blocks and wire falls for each boom, as required under heading of rigging and blocks.
6 cargo beam clamps.
2 boxes pilot signals.
2 boxes distress signals.
1 boatswain's chair.

23. IN GENERAL.

It is the spirit and intent of these specifications to cover the construction of complete steamship hull, joiner work, etc. All material used in the construction of this vessel's hull, etc., to be of good quality, and workmanship throughout to be first class.

Any extras entailing additional cost or extension of time for delivery of these vessels, hulls, etc., must be agreed upon in writing. Any articles or outfit furnished by owners and delivered to builders to be received, cared for, and put on board by builders. For the purpose of installing propelling machinery, pumps, tanks, boilers, etc., as furnished and installed by owners, where necessary to leave beams, deck, joiner work, etc., loose, same to be put in place, painting and finishing work done by builders afterwards. All holes for sea-drainage connections to be done by builders.

FURNISHINGS, BEDDING, ETC.

1. FURNITURE.

The following furniture will be supplied and fitted by the builders in the locations specified:

2. SEAMEN'S QUARTERS.

6 metal-pipe berths, standee type, with spring bottoms.
6 metal lockers.
2 seats.
1 mirror.
1 toilet rack.
6 hat and coat hooks.

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3. FIREMEN'S QUARTERS.

6 metal-pipe berths, standee type, with spring bottoms.
6 metal lockers.
2 seats.
1 mirror.
1 toilet rack.
6 hat and coat hooks.

4. GUN-CREW QUARTERS.

12 metal-pipe berths, standee type, with spring bottoms.
12 metal lockers.
2 seats.
2 mirrors.
2 toilet racks.
12 hat and coat hooks.

5. QUARTERMASTER'S ROOM.

3 metal berths with spring bottoms.
3 metal lockers.
Seat.
Stool.
Lavatory.
Mirror.
Toilet rack.
6 hat and coat hooks.

6. CAPTAIN'S ROOM.

Built-in berth with two drawers under.
Transom seat with two drawers, extension.
Built-in locker.
Book rack, oak.
Roll-top desk.
Revolving desk chair.
Morris chair, oak.
4 hat and coat hooks.

7. SPARE ROOM.

Built-in berth, two drawers and locker under.
Transom seat, two drawers under.
Built-in locker.
Lavatory.
Mirror.
Toilet rack.
4 hat and coat hooks.

8. FIRST OFFICER'S ROOM.

Built-in berth, two drawers under.
Built-in locker, drawers under.
Transom seat, two drawers under.
34-inch flat-top desk.
Bent-wood desk chair.

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Keyboard.
Lavatory.
Mirror.
Toilet rack.
3 hat and coat hooks.

9. LIEUTENANT'S ROOM.

Built-in berth, two drawers under.
Built-in locker, drawers under.
Transom seat, two drawers under.
34-inch roll-top desk.
Bent-wood desk chair.
Lavatory.
Mirror.
Toilet rack.
3 hat and coat hooks.

10. SECOND AND THIRD OFFICERS' ROOMS.

Each room:
1 built-in berth, two drawers under.
1 built-in locker.
1 transom seat, two drawers under.
Lavatory.
Mirror.
Toilet rack.
2 hat and coat hooks.

11. OFFICERS' MESS ROOM.

1 table, 33 inches by 12 feet, with rack.
14 revolving chairs.
2 built-in chiffoniers.
1 2-light chandelier.
Mirror.
1 8-day clock, nickel case, 6-inch face.
1 medicine chest fitted with filled bottles.
1 inkstand.
Shelf with brass drip pan for water cooler.
20 hat and coat hooks.

12. PETTY OFFICERS' AND GUN-CREW MESS ROOM.

1 table, 33 inches by 8 feet, with rack.
9 revolving chairs.
1 dish closet.
15 hat and coat hooks.

13. PANTRY OUTFIT.

1 steam table, 3 feet by 24 inches, furnished with 1 planished platter and 4 enameled soup and vegetable dishes, to set in top of dresser.
1 20 by 16 by 12 inch sheet-lead sink, with drain board and force pump.
1 set of urns.
1 refrigerator.

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14. CHIEF ENGINEER'S ROOM.

1 built-in berth, two drawers under.
Transom seat, two drawers under.
Built-in locker.
Flat-top desk.
Revolving desk chair, oak.
Keyboard.
Book rack over berth.
Lavatory
Mirror } in toilet.
Toilet rack
4 hat and coat hooks.

15. FIRST ASSISTANT ENGINEER'S ROOM.

Built-in berth and two drawers.
Transom seat, with two drawers.
Built-in locker.
Flat-top desk.
Bent-wood desk chair.
Keyboard.
Book rack over berth, oak.
Lavatory.
Mirror.
Toilet rack.
3 hat and coat hooks.

16. SECOND AND THIRD ASSISTANT ENGINEERS' ROOMS.

Each room:
1 built-in berth, two drawers under.
1 built-in locker.
Transom seat, with two drawers under.
Flat-top desk.
Lavatory.
Mirror.
Toilet rack.
3 hat and coat hooks.

17. COOK'S ROOM.

2 built-in berths, drawers and lockers under.
Transom seat, two drawers under.
2 built-in lockers.
Keyboard.
Lavatory.
Mirror.
Toilet rack.
6 hat and coat hooks.

18. OILER'S ROOM.

3 metal berths with spring bottoms.
Drawers under berths.

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3 metal lockers.
Seat with locker under.
Lavatory.
Mirror.
Toilet rack.
6 hat and coat hooks.

19. MESSMAN AND MESSBOYS' ROOMS.

Each room:
2 metal berths, spring bottoms.
2 drawers under berths.
2 metal lockers.
Seat with locker under.
Lavatory.
Mirror.
Toilet rack.
6 hat and coat hooks.

20. WHEELHOUSE.

Flag locker.
Drop-leaf desk.
Transom seat.

21. CHART ROOM.

2 built-in lockers, one fitted with galvanized-iron drip pan for oilskins.
Chart table with drawers, 6 by 3 feet.
Bookrack.
Chronometer box.
Keyboard.
Roll-top desk.
1 revolving chair.
6 hat and coat hooks.

22. HOSPITAL.

4 metal pipe berths (standee type with spring bottoms).
4 metal lockers.
1 lavatory.
1 mirror.
1 toilet rack.
1 seat.

23. WIRELESS ROOM.

2 built-in berths with drawers and locker under.
2 built-in lockers.
1 lavatory.
1 mirror.
1 toilet rack.
1 instrument bench.
4 hat and coat hooks.

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24. MISCELLANEOUS FURNITURE.

Each metal locker will be fitted with a shelf, four coat hooks, and a padlock. Wooden lockers will each have a shelf and six coat hooks.

The captain's and chief engineer's berths will have a spiral wire spring; all other built-in berths will have seven wire springs on steel frames.

There will also be supplied the following:

6 camp stools.
4 coil mats.
16 bracket oil lamps with smoke bell and holder.
1 mess table with fixed rack and 2 benches and 1 dish rack each for sailors' and firemen's mess rooms.

25. UPHOLSTERY. (Supplied by builders.)

The following will be upholstered in curled hair and fabrikoid, all to be tufted:

Transom seats and backs in wheel house, captain's and chief engineer's rooms.

Transom seats in first officer's room, second and third officers' rooms, cook's room, first assistant engineer's room, second and third assistant engineer's rooms, quartermaster's room, lieutenant's room, gunners' room, and spare room.

Revolving chairs in officers' and petty officers' mess rooms.

Morris chair in captain's room.

26. COOK'S STORES. (Supplied by builders.)

1 copper boiler.
1 steamer.
6 sauce pans.
2 frying pans.
4 bake pans.
1 sea-pie pan.
2 gridirons.
1 colander.
1 knife board and box.
1 tormentor.
1 blackjack.
1 iron kettle, 1 gallon.
1 ladle.
1 cook's saw, 18 inches.
1 cook's ax.
1 paste board and box.
1 potato beater.
1 rolling pin.
1 galley knife and fork.
1 dredger.
1 large spoon.
1 flour sieve.
1 mincing knife.
1 mincing machine.

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1 chopping knife.
1 toasting fork.
1 steel.
1 oval pan, large.
2 water tins.
2 pails, galvanized.

27. CABIN STORES. (Supplied by builders.)

1 linen table cover.
2 cabin brushes.
1 hand brush.
1 clothes brush.
1 black-lead brush.
1 set shoe brushes.
4 cleaning pans.
2 brass cuspidors.
1 dust pan.
1 cabin bell.
1 stone water cooler and filter, 4 gallons.
1 tin tea canister, 10 pounds.
1 tin coffee canister, 10 pounds.
1 copper tea kettle.
1 teapot.
1 tin coffeepot.
1 coffee mill.
2 bread trays.
2 tea trays.
1 knife basket.
1 plate basket.
1 nutmeg grater.
2 corkscrews.
1 treacle bottle.
1 sugar box.
1 candle box.

28. OFFICERS' AND PETTY OFFICERS' OUTFIT. (Supplied by builders.)

4 American oilcloth table covers.
1 stone water cooler and filter, 4 gallons.
2 block-tin teapots.
2 block-tin coffeepots.
1 large tin kettle.
2 mustard pots.
2 pepper boxes.
2 salt boxes.
2 japanned crust frames and bottles.
2 soup tureens and ladles.
12 tablespoons, white metal.
12 dessert spoons, white metal.
12 teaspoons, white metal.

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12 egg spoons, white metal.
4 salt spoons, white metal.
12 black-handled knives and forks.
4 pairs black-handled carvers.
2 steels.
12 tumblers.
12 cups and saucers, tea.
12 half-pint mugs.
12 vegetable dishes.
12 soup plates.
12 dinner plates.
12 pudding plates.
2 butter dishes.
2 cream jugs.
4 cuspidors, enameled.
2 sugar basins.

29. CUTLERY AND PLATED WARE. (Supplied by builders.)

2 teapots, 1 quart.
2 coffeepots, ½ gallon.
2 sugar basins.
2 cream jugs, ½ pint.
2 cruet stands, 6 glasses.
2 toast racks.
2 soup tureens.
2 soup ladles.
2 sauce ladles.
2 sets dish covers.
2 dozen table forks.
2 dozen dessert forks.
2 pickle forks.
2 dozen tablespoons.
2 dozen teaspoons.
2 dozen dessert spoons.
12 egg spoons.
4 salt spoons.
4 mustard spoons.
2 sugar spoons.
2 gravy spoons.
2 pair sugar tongs.
2 dozen table knives.
2 dozen dessert knives.
4 pairs carvers.
2 table steels.

30. GLASS AND CHINAWARE. (Supplied by builders.)

1 water bottle and 2 tumblers for each room.
12 tumblers.
2 salts.
1 sugar basin.
12 meat plates, 10-inch.

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12 soup plates, 10-inch.
12 pudding plates, 8-inch.
12 cheese plates, 6-inch.
6 dishes, assorted platters.
6 baking dishes.
2 covered dishes, vegetable.
2 sauce tureens.
2 sauce boats and stands.
12 breakfast cups and saucers.
12 teacups and saucers.
12 breakfast plates.
12 tea plates.
6 egg cups.
6 basins.
2 butter dishes.
2 cream jugs.
6 jugs.
2 hot-water jugs.
6 half-pint mugs.
2 slop basins.

MATTRESSES AND BEDDING

[Supplied by builders.]

31. CAPTAIN'S ROOM.

1 elastic felt mattress.
2 feather pillows.
12 sheets, 72 by 108 inches.
8 pillowcases.
6 towels.
2 pair blankets, plaid, one black, one brown.
3 counterpanes, white.
1 mattress cover.
2 pillow covers.

32. SPARE ROOM.

2 elastic felt mattresses.
4 feather pillows.
12 sheets, 54 by 108 inches.
6 pillowcases.
6 towels.
2 pair blankets, plaid, one black, one brown.
3 counterpanes, white.
2 mattress covers.
4 pillow covers.

33. WIRELESS ROOM.

2 elastic felt mattresses.
4 feather pillows.
24 sheets, 54 by 108 inches.

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12 pillowcases.
12 towels.
4 pair blankets, plaid.
6 counterpanes, colored.
2 mattress covers.
6 pillow covers.

34. GUNNERS' ROOM.

1 elastic felt mattress.
2 feather pillows.
12 sheets, 54 by 90 inches.
6 pillowcases.
6 towels.
2 pair blankets, plaid.
3 counterpanes, colored.
1 mattress cover.
2 pillow covers.

35. LIEUTENANT'S ROOM.

1 elastic felt mattress.
2 feather pillows.
12 sheets, 54 by 90 inches.
6 pillowcases.
6 towels.
2 pair blankets, plaid.
2 counterpanes, colored.
1 mattress cover.
2 pillow covers.

36. CHIEF ENGINEER'S ROOM.

1 elastic felt mattress.
2 feather pillows.
12 sheets, 63 by 90 inches.
6 pillowcases.
6 towels.
2 pair blankets, plaid.
3 counterpanes, colored.
1 mattress cover.
2 pillow covers.

37. FIRST OFFICER'S ROOM.

1 elastic felt mattress.
2 feather pillows.
12 sheets, 54 by 90 inches.
6 pillowcases.
6 towels.
2 pair blankets, plaid.
2 counterpanes, colored.
1 mattress cover.
2 pillow covers.

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38. SECOND AND THIRD OFFICERS' ROOMS.

Each room:
1 felt mattress.
2 feather pillows.
6 sheets, 54 by 90 inches.
6 pillowcases.
2 pair blankets, plaid.
2 counterpanes, colored.
6 towels.
1 mattress cover.
2 pillow covers.

39. COOK'S ROOM.

2 felt mattresses.
4 feather pillows:
12 sheets, 54 by 90 inches.
12 pillowcases.
4 pair blankets, plaid.
4 counterpanes, colored.
12 towels.
2 mattress covers.
4 pillow covers.

40. FIRST ASSISTANT ENGINEER'S ROOM.

1 felt mattress.
2 feather pillows.
6 sheets, 54 by 90 inches.
6 pillowcases.
2 pair blankets, plaid.
2 counterpanes, colored.
6 towels.
1 mattress cover.
2 pillow covers.

41. SECOND AND THIRD ASSISTANT ENGINEERS' ROOMS.

Each room:
1 felt mattress.
2 feather pillows.
6 sheets, 54 by 90 inches.
6 pillowcases.
2 pair blankets, colored.
2 colored bedspreads.
6 towels.
1 mattress cover.
2 pillow covers.

42. THREE OILERS.

3 felt mattresses.
3 feather pillows.
15 sheets, 54 by 90 inches.

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6 pillowcases.
6 pair blankets, colored.
6 colored bedspreads.
15 towels.
3 mattress covers.
3 pillow covers.

43. QUARTERMASTER'S.

3 felt mattresses.
3 feather pillows:
12 sheets, 54 by 90 inches.
6 pillowcases.
6 pair blankets, colored.
6 colored bedspreads.
12 towels.
3 mattress covers.
3 pillow covers.

44. MESSMAN AND MESSBOYS.

Each room:
2 felt mattresses.
2 feather pillows.
8 sheets, 54 by 90 inches.
4 pillowcases.
4 pair blankets, colored.
8 towels.
2 mattress covers.
2 pillow covers.
4 colored bedspreads.

45. SIX SAILORS.

6 mattresses.
6 pillows.
12 sheets, colored.
12 pillowcases, colored.
6 pair colored blankets.

46. SIX FIREMEN.

6 mattresses.
6 pillows.
12 sheets, colored.
12 pillowcases, colored.
6 colored blankets.

47. TWELVE GUN CREW.

12 mattresses.
12 pillows.
24 sheets, colored.
24 pillowcases, colored.
12 pair colored blankets.

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48. HOSPITAL.

4 mattresses.
4 pillows.
8 sheets, colored.
8 pillowcases, colored.
4 pair colored blankets.

49. LINEN, ETC. (Supplied by builders.)

4 dozen napkins for cabin.
9 tablecloths for cabin.
3 tablecloths, officers' mess.
4 dozen napkins, officers' mess.
6 dozen roller towels, 3 yards each.
4 dozen bath towels.
6 dozen dish towels.
1 tapestry table cover for saloon table.
4 curtains for chart-house windows.
36 pair airport curtains, rods and fixtures, put up complete.
1 white table oilcloth for 14-foot table.
1 silence cloth for officers' mess.
2 hassocks.
4 laundry bags.
4 folding yacht chairs.
3 waste paper baskets.

GLASSWARE, CUTLERY, ETC.

[Supplied by builders.]

50. OFFICERS' AND PETTY OFFICERS' MESS.

18 knives and forks, silver plated.
18 tablespoons, silver plated.
18 teaspoons, silver plated.
1 griddle.
2 large coffee boilers.
2 galley spoons.
6 mess kits.
1 egg whip.
12 dessert spoons.
2 can openers.
1 fish kettle.
12 10-inch pie plates, enameled.

51. SEAMEN AND FIREMEN.

12 iron-handle knives and forks.
12 tablespoons, tin.
12 enameled cups.
12 teaspoons, English nickel silver.
1 French frying pan.
2 whisk brooms.
8 large rolls toilet paper.

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1 box blacking.
1 tea strainer.
1 coffee strainer.
2 glass pepper shakers.
2 glass salt shakers.
2 brass Yale locks.
1 pair ice tongs.
3 hotel sauce pots and lids.
1 coffeepot, for cabin.
1 teapot, for cabin.
3 mess tins.
1 gravy strainer.
2 hotel frying pans, egg.
2 muffin pans.
2 pots and lids, hotel soup.
8 10-inch pie plates, enameled.
1 Royal teapot, English.
1 Royal coffeepot, English.
6 plain white vegetable dishes.
12 glasses.
12 9-inch soup plates.
12 nickel-silver teaspoons.
1 silver-plated butter knife.
6 large meat platters.
2 soup ladles.
18 glasses.
2 dust pans.
2 dust brushes.
1 Royal teapot.
1 Royal coffeepot.
1 17-quart Royal dish pan.
1 alarm clock.
1 spring balance.
2 wood stools.
2 large enameled coffee boilers.
6 8-quart deep tin pudding pans.
6 cups and saucers, officers' mess.
6 dinner plates.
6 pudding plates.
1 small funnel.
3 sirup jugs.
1 ice-cream freezer.
1 quart measure.
2 Boston bean pots.
1 cake pan.
2 salt shakers.
2 pepper shakers.
6 nickel-plated soap dishes.
2 toothpick holders.
1 set sadirons.
1 biscuit cutter.

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1 doughnut cutter.
1 dish basket.
2 bread boxes.
1 cake box.
3 bread pans.
1 double boiler.
6 coffee mugs.
2 paring knives.
2 bread knives.
1 French knife.
2 rugs, as selected.
1 bread raiser, 17 quarts.
2 brown-bread molds.
1 sugar bowl.
3 butcher knives.
2 forks for galley.
1 butter dish, hotel.
8 enameled 7-inch pie plates for crew.
8 enameled drinking cups.
8 enameled soup plates.
2 butter dishes for crew.
1 enameled soup tureen.
8 enameled pudding pans.
4 egg frying pans.
2 large frying pans.
1 toasting wire.
1 7-quart double boiler.
3 tin cake pans.
6 hotel soup plates for mess room.
9 hotel pie plates for mess room.
2 dozen hotel oatmeal dishes.
2 dozen hotel side dishes.
1 colander.
6 white coats for cook.
6 white aprons.
4 soup stock pots.
3 brooms.
1 lantern.
1 mustard pot.
1 vinegar pot.
1 vinegar cruet, engineers' mess.
2 vinegar cruets, sailors and firemen.
6 enameled soap dishes.
3 hand scrub brushes.
1 glass lemon squeezer.
4 2-gallon tin milk cans.
2 No. 2 medium brush cocoa mats.
4 small frying pans.
1 hotel pan.
2 bread pans.
1 cake turner.

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2 meat forks.
3 biscuit cutters.
1 flour dredge.

1. DECK PUMPS.

Hand deck pumps will be installed as required by American Bureau of Shipping and United States inspection laws, as follows: One flywheel hand pump aft, with suction from sea and bilge system and discharge overboard and to the fire line.

2. HAND STEERING GEAR.

There will be a hand-screw steering gear (relief screw gear) connected direct to head of rudder stock, which will be squared to receive hand-gear crosshead, hand gear to have iron wheel about 60-inch diameter and iron standard.

3. DRAINAGE.

Lead pipes of ample size will be fitted for draining all plumbing and other spaces as required. Floor drains and deck scuppers will be provided as specified elsewhere.

4. FRESH-WATER SYSTEM.

The fresh-water system will be maintained by a steam pump in the engine room, delivering to gravity tank, located as directed, from which water will be run to the officers' and petty officers' rooms, galley, and service faucets. Piping will be of galvanized iron. Washbasins, sinks, etc., will drain overboard. Fresh-water pump and engine-room connections supplied by owners.

5. STEAM-HEATING SYSTEM.

Living quarters, mess rooms, storerooms where required, wheelhouse, toilets, and wash rooms, etc., will be heated by steam. The pipes and coils will be of black iron, except where specified to be of brass or copper. Expansion bends will be of copper with screw fittings brazed on. Joints will be made with unions; no bolted flanges. Nipples passing through decks will be of brass. Coil radiators will be of 1-inch pipe and all coil heaters and radiators will be fitted with ½-inch steam and drain valves.

Radiators of cast iron will be fitted in officers' quarters, officers' messroom, and captain's bath. Iron-pipe coil or cast-iron radiators will be fitted in crew's quarters. Radiators will have insulation of galvanized sheet iron and asbestos fitted back of them. Brass coil radiators wil be fitted in wheelhouse. Brass-wire or galvanized-wire screens will be fitted over radiators where necessary. Steam for heating water as specified elsewhere. Steam coils for heating steam table, sinks, bath, showers, etc., will be trapped and returned to drain. Steam and return main of heating system will be insulated. Engine-room connections provided for and made up by owners.

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6. STEWARD'S OUTFIT.

There will be provided and fitted in galley one 5-foot range of Bramhall Deane, Duparquet, or Elisha Webb & Sons make, or other approved range, fitted with one firebox with two ovens. One copper boiler to be fitted at side of range and connected with steam coil and return outlet to engine-room trap. One vegetable steamer in galley, 24 by 24 inches galvanized iron. There will be fitted in galley a sheet-iron coal box, capacity about ½ ton. In galley and pantry will be provided and fitted sinks either of galvanized iron or lead lined; sinks fitted with drains overboard through soil pipe. There will be supplied and fitted in pantry one refrigerator of suitable size. There will be provided in pantry a 3-foot steam table of approved pattern, with plate creel underneath and connected to waste overboard through soil pipe. Also refrigerator boxes connected in similar manner. There will be provided and fitted in galley or pantry one 4-gallon coffee urn, one 4-gallon hot-water urn, to be combination connected together so as to work automatically. Urns to be of heavy type, to be constructed of 36-ounce planished copper and all fittings nickel plated.

Steward's storeroom will be fitted with zinc or tin lined bins, shelves, tables, racks, etc., to approval of owners.

Lamp room will be fitted with two 50-gallon and two 25-gallon oil tanks, to have draw-off faucet to each tank, with filling hole at top. All shelves, drawers, etc., will be fitted in metal. Steam connections provided to meet the United States inspector's requirements. Shelves will be built to suit storing of two sets of masthead lights, side lights, one anchor light, one stern light, three red danger signals, three day folding signals and binnacle lights for compasses, one brass bull's-eye lantern, heavy hooks fitted in ceiling to hang cargo lanterns on. Galley and pantry will be fitted with necessary racks, shelves, drawers, lockers, sinks, hand pump. All works as far as practicable to be of metal. Dresser tops lined as directed.

7. PLUMBING.

Plumbing will be of the Cambridge or other make of equal quality. For captain's bathroom, bathtub of enameled iron, 4 feet 6 inches length, nickel-plated brass trimmings, water to waste overboard through soil pipes. Water-closet of enameled iron, straight hopper, flush rim type, connected direct with sanitary pump, with mahogany seat and nickel-plated brass trimmings. Washbasin of enamel iron, open plumbing style, to have running water supply. All brass fittings, plumbing connections, etc., in captain's bathroom will be nickel plated. There is also to be supplied brass towel racks, soap dishes, tumbler holders, and one mirror.

Officers' and engineers' wash rooms.—Each to have two flush rimmer straight hoppers, enamel iron water-closet bowls con-

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nected direct with supply pipe to sanitary pump. Water-closets fitted with mahogany seats and nickel-plated brass trimmings, seat and bowl attachment; no cover. One urinal bowl, one shower bath, one washbasin. Washbasin will be enamel iron with fresh running water. Nickel-plated brass towel rack, soap dish, tumbler holder, and one mirror.

Firemen's and sailors' wash rooms.—Firemen's and sailors' wash rooms each to be fitted with two closets. The closets will be of enamel iron, wash-out pattern, connected to sanitary pump in engine room. These wash rooms will be fitted with an enamel iron wash trough with running salt water and a shower bath with hot and cold sea water.

In licensed and petty officers' rooms and captain's bath there will be provided one enamel iron washbasin with splash back attached, with running fresh water and drains overboard through soil pipe. All plumbing trimmings in captain's bathroom, officers' wash room, and licensed officers' room will be nickel plated; mirror, towel racks, soap dishes, tumbler holders, etc., will be fitted as required. There will be overboard drains collected at one point as far as possible; then drain through ship's side.

Steam service.—Sinks will be fitted with steam coil to heat water. This service will be independent of radiators. Steam cooking service pipes to galley and pantry will be on the same service line. Suitable steam heater or mixer and means for obtaining hot water will be provided for captain's bath and showers for officers' and crews' lavatories and showers, and cold sea water will be provided for captain's bath and for showers. Hand pump to draw from fresh water tanks will be fitted in galley for use when the gravity tank may not be working.

8. COMMUNICATION.

Call bells, with latest marine type push button, will be installed for bell call from chief engineer's and captain's rooms to pantry. Telephone communication from wheel house to wireless and to engine room. Speaking tube from chief engineer's room to engine room.

The communication will be installed and alarm bells supplied to meet the requirements of United States inspection.

9. WIRELESS TELEGRAPH.

Wireless-telegraph outfit will be supplied and installed by owners. Builders will receive and care for the apparatus and place instruments in wireless house.

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[Revised June 1, 1917.

AMENDMENTS TO SPECIFICATIONS NO. 4, DOUGLAS FIR SHIP.

HULL ONLY.

HULL, ETC.

Section 2. DESCRIPTION.

In line 15 of first paragraph, after the word "booms," insert: "Winches will be."

In line 6 of third paragraph strike out "and auxiliary hand."

In lines 7 and 8 of third paragraph strike out "steam-heating system, complete drainage system."

Section 7. DRAWINGS AND PLANS.

At end of section insert: "Changes in builder's approved plans and specifications will not be permitted unless approved in writing by owners."

Section 60: FORE AND AFTER PEAKS.

At end of section insert: "Sounding tubes furnished and installed by builders will be fitted to fore and after peaks."

Section 62. ICE HOUSES AND COLD STORAGE.

In last line strike out "thermometer, and electric light" and insert "thermometer will be supplied by owners and installed by builders as directed."

Section 94: MOORING RINGS.

Strike out all of first sentence and insert in lieu thereof the following: "Mooring rings to be of cast iron, with strong foundations securely bolted to filling chocks and waterways as shown."

Section 95: GUN FOUNDATIONS.

At end of section insert: "Foundations will be built in accordance with plans furnished by owners."

MISCELLANEOUS UNDER HULL.

Section 8: ACCOMMODATION LADDER.

At end of section insert: "Ladder will be built in accordance with plans furnished by owners."

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JOINER WORK.

Section 24. ENGINEERS' STOREROOM.

In lines 2 and 3 strike out "tools, gear, and outfit will be placed and secured."

Section 34. WIRELESS ROOM.

In line 3 strike out "and necessary outfit."

GENERAL UNDER HULL.

Section 2. BOAT DAVITS AND SKIDS.

In line 2 strike out the words "fitted" and "two."

At end of section insert: "Davits will be purchased by owners and installed by builders."

Section 3. LIFEBOATS AND WORKING BOAT.

Strike out entire section and insert in lieu thereof the following: "Lifeboats, life rafts, working boat, and gear will be furnished by owners and installed by builders in accordance with the Rules and Regulations of the United States Steamboat-Inspection Service, as amended to date."

Section 4. RIGGING, BLOCKS, AND GEAR.

In line 1 strike out "standard" and insert "standing."

At end of section insert: "All standing rigging will be supplied and installed by builders. All running rigging will be supplied by owners and installed by builders."

Section 9. SHIP'S BELLS.

At end of section insert: "Bells will be supplied by owners and installed by builders."

Section 14. UNITED STATES INSPECTION OUTFIT.

After the heading insert: "(Supplied by owners)."

Section 15. SIGNAL LIGHTS.

In the heading strike out "builders" and insert "owners."

Section 16. MISCELLANEOUS OUTFIT.

In the heading strike out "builders" and insert "owners."

Section 17. DECK OUTFIT.

Strike out the first line, as follows: "The following deck outfit to be supplied by the builders."

At end of section insert:

"All the items listed above will be supplied by owners, except the following:

"6 wooden fenders.

"Iron bars over all hatches to be fitted along with hatch battens.

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"100 wooden hatch wedges.
"2 stages, hooks, and tackle for painting hull outside."

Section 18. COOPER'S STORES.
In the heading strike out "builders" and insert "owners."

Section 19. CARPENTER'S STORES.
In the heading strike out "builders" and insert "owners."

Section 20. BOATSWAIN'S STORES.
In the heading strike out "builders" and insert "owners."

Section 21. LAMPS.
In the heading strike out "builders" and insert "owners."

Section 22. BLOCKS.
In the heading strike out "builders" and insert "owners."

Section 23. IN GENERAL.
At end of section insert: "All sea connections and valves will be supplied by owners and installed by builders as directed."

FURNISHINGS, BEDDING, ETC.

Section 1. FURNITURE.
Strike out entire section and insert: "Owners will supply and builders install all metal berths, metal lockers, and movable furniture and fittings. Builders will furnish and install all built-in berths and furniture and toilet equipment as follows: Seats, mirrors, toilet racks, lavatories, coat and hat racks, keyboards, sinks, and tables."

Section 13. PANTRY OUTFIT.
In lines 4 and 5 strike out "and force pump."

Section 25. UPHOLSTERY.
In the heading strike out "builders" and insert "owners."

Section 26. COOK'S STORES.
In the heading strike out "builders" and insert "owners."

Section 27. CABIN STORES.
In the heading strike out "builders" and insert "owners."

Section 28. OFFICERS' AND PETTY OFFICERS' OUTFIT.
In the heading strike out "builders" and insert "owners."

Section 29. CUTLERY AND PLATED WARE.
In the heading strike out "builders" and insert "owners."

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Section 30. GLASS AND CHINA WARE.

In the heading strike out "builders" and insert "owners."

On page 52, under center heading, "Mattresses and Bedding," strike out "builders" and insert "owners."

Section 49. LINEN, ETC.

In the heading strike out "builders" and insert "owners."

On page 56, under center heading "Glassware, cutlery, etc.," strike out "builders" and insert "owners."

Section 1. DECK PUMPS. (Page 59.)

In line 1 strike out "installed" and insert "furnished by owners and installed by builders."

Section 2. HAND STEERING GEAR. (Page 59.)

At end of section insert: "Hand steering gear will be supplied by owners and installed by builders."

Section 6. STEWARD'S OUTFIT. (Page 60.)

In third line from end strike out "hand pump."

At end of section insert: "Owners will supply and builders install range, boiler, vegetable steamer, refrigerator, steam table, and urns. Builders will supply and install coal box, sinks, bins, shelves, tables, racks, refrigerator boxes, lamp room, oil tanks, etc."

Section 7. PLUMBING. (Page 61.)

Under subheading "Steam service," strike out last sentence with reference to hand pump.

Section 8. COMMUNICATION. (Page 61.)

Insert in heading: "(Supplied and installed by owners.)".

GENERAL.

All screens to be of copper wire.

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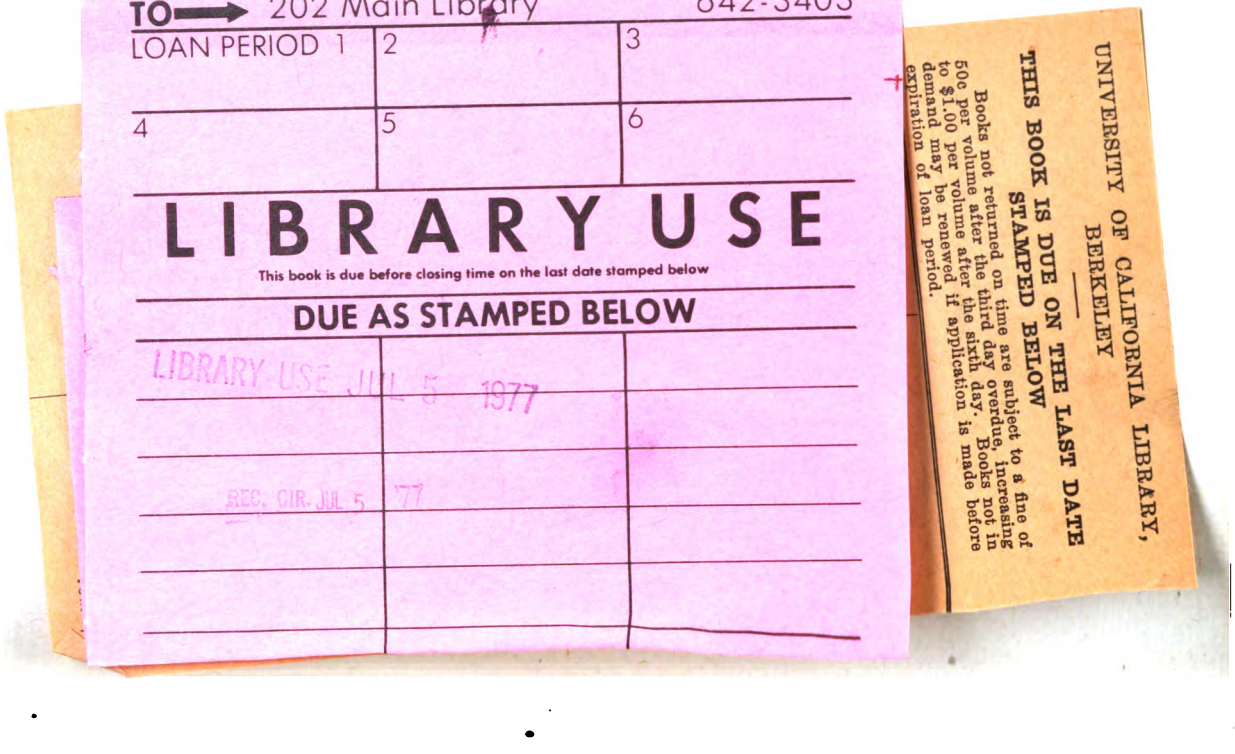

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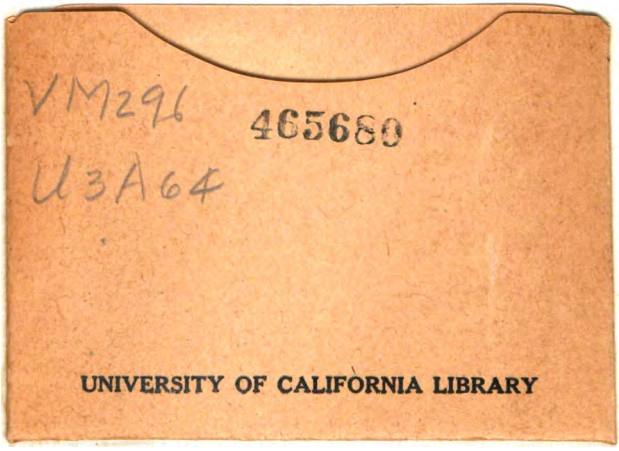

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